HANDY BOOK ON PAINTING

NATIONAL LEAD COMPANY

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HANDY BOOK ON PAINTING

IF you want to know how to paint a house or other building and how much paint it will take; if you want to know how to finish a wall or floor, how to paint metal, how to paint masonry, how to paint an automobile, a carriage, a wagon or a boat—*this book will tell you.* It is a veritable storehouse of practical paint knowledge, equally valuable as a guide to the uninitiated and as a reference work to the architect, engineer, building manager, painter and other experienced user of paint.

In saying "this book will tell you," it is not implied that the mere following of directions will turn a novice into a skilled painter. That is not possible. It would be just as ridiculous to claim that reading the recipes in a cook book will turn a beginner into an expert chef.

Painting is an art and there are many things about the art of painting which require constant practice and observation to learn. It always pays, therefore, to hire an experienced painter if one is available. The superior knowledge of the man who "knows how" is worth the little extra money it may cost to hire him. Do not, however, allow yourself to be deprived of the advantages of made-to-order paint simply because a painter who knows how to mix lead and oil into paint is not within easy reach, as is the case sometimes in the smaller towns. Any painter can be shown in a few minutes how to mix white-lead and linseed oil, or red-lead and linseed

oil, into paint. Once a painter has tried mixed-to-order paint he will never be content to use anything else.

The Handy Book on Painting gives all necessary mixing and painting directions. They are simple. Hand them to your painter. See that he follows them.

Attention is called particularly to the directions for doing small jobs given on page 94. By the method suggested, white-lead can be mixed into paint in a jiffy and you are assured of the same durable lead-and-oil paint for the small jobs that is used for the big ones.

WHITE-LEAD FOR WOOD

The right prescription for wood, outside or inside, is an old one—simply pure white-lead thinned to painting consistency with pure linseed oil. Nothing has yet been found to match this combination. It gives the best protection and decoration at the least outlay.

Being mixed to order, lead-and-oil paint can be adapted to meet all surface and weather conditions. It can also be varied in color from pure white to every desirable shade and tint by the addition of the proper tinting materials.

Paint made of pure white-lead and pure linseed oil forms a tough, tenacious film that never scales off, but wears down smoothly. When the time comes to paint again, no expensive preparation is necessary. It is one of the greatest objections to substitutes offered for pure white-lead that they leave the surface so rough and lumpy, it not only looks bad, but requires the use of the gasoline torch to smooth it down before repainting. This preparatory work costs time and money, which of course must be added to the original cost

of those substitutes before their cost is compared with that of pure white-lead and linseed oil.

It never pays to use cheap paint. The cost of even the best paint is a minor item in the whole cost of a painting job. Labor is the chief item. Therefore, it is false economy to spend money and time in applying paint which will crack and scale off in ugly splotches, allowing the weather to attack the surface underneath.

Our Dutch Boy white-lead is the highest grade white-lead that can be made. It is pure, finely ground, smooth, excellent in spreading and hiding properties—a perfect paint material. We urge you to try it just once; we know it will hold your favor by its merit.

Dutch Boy white-lead is on sale in all reliable paint stores and is used by first-class painters everywhere. It comes in 12½, 25, 50 and 100 pound steel kegs and one and five pound tins. Our famous trademark, the Dutch Boy Painter, is on every keg and tin and is your protection against substitutes.

All formulas in the Handy Book on Painting which call for pure white-lead are based on the use of Dutch Boy white-lead.

RED-LEAD FOR METAL

Pure white-lead, properly thinned to suit the special conditions under which the paint is to be used, gives the best protection for wood and other building materials except metal. When it comes to the painting of metal, white-lead (though good for the purpose) must yield first place to pure red-lead.

Red-lead is that flaming orange-red paint which is used so extensively to preserve struc-

tural iron and steel, such as skyscraper skeletons and bridges, and to protect ships, gas tanks, railway equipment, farm machinery, etc., against the corrosive action of water, acids and atmospheric gases. In fact, there is practically no limit to the use of red-lead as a protective paint for metal. Almost everywhere iron and steel are used, red-lead is used.

All red-lead is not the same in quality. It is best when you have need of paint for metal to be on the safe side by insisting on one of our brands. We manufacture dry red-lead and also red-lead in paste form. All our red-lead is standard and, mixed with pure linseed oil, dries to a hard, tenacious, insoluble film, insuring best protection and greatest wear.

Our paste red-lead, known as Dutch Boy red-lead, is the highest grade of red-lead on the market. It stays soft and workable like white-lead and linseed oil and, being in paste form, is easy and clean to handle. Besides, Dutch Boy red-lead goes much farther owing to its superior fineness.

Dutch Boy red-lead is packed in 12½, 25, 50 and 100 pound steel kegs under the Dutch Boy trademark. It can be bought at all leading paint stores.

EXTERIOR PAINTING

The term "Exterior Painting" as used here applies only to the painting of outside wood. Other building materials, such as metal, concrete, brick, stone, etc., used outside, properly come under this heading but, as these materials present distinct painting problems of themselves, each is treated separately further along in the Handy Book on Painting. See index.

HOW MUCH PAINT?

AN EASY WAY TO CALCULATE QUANTITY OF MATERIAL TO PROVIDE.

For those who do not wish to go to the trouble involved in figuring out the measurements of a building in detail and who are content to know the approximate amount of paint needed, the following method will suffice:

QUANTITY OF PAINT FOR BODY OF HOUSE.

First measure girth of house in feet and multiply by height in feet to eaves. If there is a gable, multiply width of gable in widest place by half the height of gable in highest place. Add the quantities and divide result by 600 (approximately the number of square feet one gallon of white-lead paint will cover). This gives the number of gallons of paint needed for the body of house, one coat.

Multiply the number of gallons thus found by the number of coats you wish to apply.

The result is the total gallons of body color you will need.

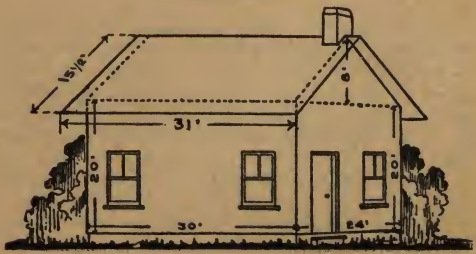
For every gallon of paint you will need the following quantities of ingredients:

Dutch Boy white-lead	14½ pounds
Pure raw linseed oil	4½ pints
Pure turpentine	⅛ pint
Pure drier	⅛ pint

QUANTITY OF TRIMMING COLOR.

If a house has only medium trim (window frames 4 inches wide or less, cornice about 9 inches extension, porch posts rather slender), count ⅖ gallon or 3⅕ pints of paint for every 100 feet of trim. If trimming is of more massive style (say window frames six inches, heavy veranda pillars 30 inches in circumference), figure ⅗ gallon or 4⅘ pints to every 100 feet.

To find the quantities of ingredients necessary proceed as explained above, multiplying by the number of coats required and using the same formula.



ACCURATE CALCULATIONS.

The exact area to be painted and the exact quantity of paint needed can be ascertained by employing the detailed rules below. If approximate calculations will do, follow the quick method of figuring described in preceding paragraphs.

SQUARE FEET IN ONE END.

Multiply height from foundation to eaves by width.

In diagram (opposite page): 20 (height) × 24 (width) = 480 square feet.

Multiply by 2 to get number of square feet in both ends.

In diagram: 480 × 2 = 960 square feet.

SQUARE FEET IN ONE SIDE.

Multiply height from foundation to eaves by length.

In diagram: 20 (height) × 30 (length) = 600 square feet.

Multiply by 2 to get number of square feet in both sides.

In diagram: 600 × 2 = 1200 square feet.

SQUARE FEET IN GABLE.

Multiply one-half the height of gable by distance between eaves.

In diagram: 4 feet (½ of 8 feet, height of gable) × 24 feet (distance between eaves) = 96 square feet.

If there is another gable of the same shape and size, multiply by 2 to get the number of square feet in both gables.

In diagram: 96×2=192 square feet.

When gables differ considerably in size they must be measured separately and the results added together to get the number of square feet in all the gables.

Add square feet in ends, sides and gables and the sum is the number of square feet of surface to be painted.

In diagram: 960+1200+192=2352 square feet to be painted.

SQUARE FEET IN ROOF.

If roof is to be painted, the paint will probably differ from that used on the body of the house and the measurements should therefore be kept separate.

Multiply length by distance from comb of roof to gutter.

In diagram: 31 (length)×15½ (distance from comb of roof to gutter)=480½ square feet.

Multiply by 2 to get the number of square feet in both sides of roof.

In diagram: 480½×2=961 square feet.

MEASURING IRREGULAR SHAPED HOUSES.

The preceding directions can easily be followed where the building is regular in shape like a box.

Occasionally, however, a building has irregular lines. In most cases of this kind, to lay down a set of rules for measuring would be to inflict unnecessary and confusing detail. If there is a large wing, figure the wing as if it were a separate building, but allowing of course for painting only three sides. If the house is very irregular or confusing we sug-

gest the use of the short cut described on page 5.

SQUARE FEET TO A GALLON OF WHITE-LEAD PAINT.

After the number of square feet to be painted has been determined, the next thing the painter wants to know is how much paint will be required to cover this surface and how to mix it.

In figuring the number of square feet a gallon of white-lead paint will cover, a great deal depends upon the surface to be painted; that is, the kind of wood. Some wood is more porous than others and consequently absorbs more paint. Much depends, too, upon the way the paint is brushed out. Some painters brush the paint out more and thereby cover more surface than others.

The following, however, may be taken as a fair average for the amount of surface a gallon of white-lead paint will cover. In no case should the variation be very great.

The priming coat mixed according to instructions given on page 11 will cover 575 square feet to the gallon, one coat. Second and third coats on new work and first and second coats on old work will cover 600 square feet to the gallon, each coat.

HOW MANY COATS.

Three coats should always be applied to a surface which has never before been painted —a thin priming coat and two heavier coats. (See formulas 1, 2 and 3, pages 11 and 12.) Two coats are sufficient for repainting old

work. (See formulas 7 and 8, page 13.) Two coats only are sometimes used on new work, for the sake of economy, but it is not true economy. A third coat would cost only *one-third* more and would make the job last *twice* as long.

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*MIXING THE PAINT.

The best paint for wood is made by mixing Dutch Boy white-lead, pure linseed oil and turpentine in the proper proportions.

STEPS TO BE TAKEN.

1st. Take the proper amount of white-lead required by the directions which follow. "Break up" or soften it in a large pail with just enough oil to bring it to a workable paste. Use a wooden paddle to stir.

2nd. Add tinting colors if the paint is to be tinted, mixing them thoroly with the white-lead.

3rd. Put in drier. Stir thoroly.

4th. Add the remainder of the oil required by the formula. Stir thoroly.

5th. Put in the turpentine.

Stir until the whole mass is thoroly mixed. The paint is now ready to apply.

PAINTING NEW OUTSIDE WOOD

(NOTE:—The following formulas are for white paint. See pages 17 to 20, inclusive, for tinted paint.)

* There are many jobs around the house which require only a comparatively small quantity of paint. For jobs of this kind, see simplified directions for making white-lead paint given on page 94.

For the first or priming coat on new, unpainted wood outside the paint should be thin. Use the following:

FORMULA NO. 1—PRIMING COAT.

(NEW WORK [WOOD] OUTSIDE).

100 pounds Dutch Boy white-lead
4 gallons pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes about 9 gallons of paint which will cover about 5,175 square feet, one coat.

NOTE:—The painter may exercise his own discretion in using a larger or smaller quantity of oil according to whether the wood is oil-absorbing, as white pine, poplar and basswood, or less permeable, as yellow pine, cypress, spruce and hemlock. The painter may, in rare cases, find it advisable to increase the quantity of turpentine, as in southern exposures, to prevent blistering. Where this is done a corresponding decrease should be made in the specified amount of linseed oil. If the wood is very resinous, such as cypress, prepare it for priming by brushing on a mixture of one pint linseed oil, one pint turpentine and one pint drier.

FORMULA NO. 2—SECOND COAT.

(NEW WORK [WOOD] OUTSIDE).

100 pounds Dutch Boy white-lead
1½ gallons pure raw linseed oil
1½ gallons pure turpentine
1 pint pure drier

The preceding formula makes about 6 gallons of paint which will cover about 3,600 square feet, one coat.

FORMULA NO. 3—THIRD COAT.

(NEW WORK [WOOD] OUTSIDE).

100 pounds Dutch Boy white-lead
3½ to 4½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes from 6½ to 7½ gallons of paint which will cover from 3,900 to 4,500 square feet, one coat.

ENOUGH PAINT FOR 1,000 SQUARE FEET

FORMULA NO. 4—PRIMING COAT.

(NEW WORK [WOOD] OUTSIDE).

1,000 square feet of surface requires about 2 gallons paint made with

22 pounds white-lead
⅞ gallon linseed oil
⅖ gallon turpentine
⅕ pint pure drier

FORMULA NO. 5—SECOND COAT.

(NEW WORK [WOOD] OUTSIDE).

1,000 square feet of surface requires 1⅔ gallons paint made with

27 pounds white-lead
⅔ gallon linseed oil
⅖ gallon turpentine
⅓ pint pure drier

FORMULA NO. 6—THIRD COAT.

(NEW WORK [WOOD] OUTSIDE).

1,000 square feet of surface requires 1⅔ gallons paint made with

24 pounds white-lead
1 gallon linseed oil
¼ pint turpentine
¼ pint pure drier

REPAINTING OUTSIDE WOOD

Paint intended for old work (wood) outside, that is, wood which has been painted before, but is in need of repainting, should be mixed differently from that intended for new work.

Two coats are enough on old work, for the old paint serves as a priming coat.

First touch up all defective places with paint mixed according to Formula No. 7 and then apply two coats as follows:

FORMULA NO. 7—FIRST COAT.

(OLD WORK [WOOD] OUTSIDE).

100 pounds Dutch Boy white-lead
2 gallons pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes about 7 gallons of paint which will cover about 4,200 square feet, one coat.

FORMULA NO. 8—SECOND COAT.

(OLD WORK [WOOD] OUTSIDE).

100 pounds Dutch Boy white-lead
3½ to 4½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes from 6½ to 7½ gallons of paint which will cover from 3,900 to 4,500 square feet, one coat.

ENOUGH PAINT FOR 1,000 SQUARE FEET.

FORMULA NO. 9—FIRST COAT.

(OLD WORK [WOOD] OUTSIDE).

1,000 square feet of surface requires 1⅔ gallons paint made with

24 pounds white-lead
½ gallon linseed oil
½ gallon turpentine
¼ pint pure drier

FORMULA NO. 10—SECOND COAT.

(OLD WORK [WOOD] OUTSIDE).

1,000 square feet of surface requires 1⅔ gallons paint made with

24 pounds white-lead
1 gallon linseed oil
¼ pint turpentine
¼ pint pure drier

PAINT INGREDIENTS IN TABULAR FORM.

For convenience and for ready reference the previous facts are tabulated on the next two pages.

TABLE A—(NEW, UNPAINTED WOOD OUTSIDE).

INGREDIENTS	PRIMING COAT	SECOND COAT	THIRD COAT
Dutch Boy white-lead	100 pounds	100 pounds	100 pounds
Pure raw linseed oil	4 gallons	1½ gallons	3½–4½ gallons
Pure turpentine	2 gallons	1½ gallons	1 pint
Pure drier	1 pint	1 pint	1 pint
How much paint it makes	9 gallons	6 gallons	6½–7½ gallons
Square feet it will cover	5,175 sq. ft.	3,600 sq. ft.	3,900–4,500 sq. ft.

TABLE B—(REPAINTING OLD WOOD OUTSIDE).

INGREDIENTS	FIRST COAT	SECOND COAT
Dutch Boy white-lead	100 pounds	100 pounds
Pure raw linseed oil	2 gallons	3½–4½ gallons
Pure turpentine	2 gallons	1 pint
Pure drier	1 pint	1 pint
How much paint it makes	7 gallons	6½–7½ gallons
Square feet it will cover	4,200 sq. ft.	3,900–4,500 sq. ft.

TABLE C—QUANTITIES OF EACH MATERIAL REQUIRED FOR MIXING ONE GALLON OF PAINT.

(NEW WORK [WOOD] OUTSIDE).

INGREDIENTS	PRIMING COAT	SECOND COAT	THIRD COAT
Dutch Boy white-lead	11 pounds	16⅔ pounds	14¼ pounds
Pure raw linseed oil	4 pints	2 pints	4½ pints
Pure turpentine	1⅔ pints	2 pints	⅛ pint
Pure drier	⅓ pint	⅕ pint	⅛ pint
Square feet it will cover	575 sq. ft.	600 sq.ft.	600 sq. ft.

(OLD WORK [WOOD] OUTSIDE).

INGREDIENTS	FIRST COAT	SECOND COAT
Dutch Boy white-lead	14¼ pounds	14¼ pounds
Pure raw linseed oil	2¼ pints	4¼ pints
Pure turpentine	2¼ pints	⅛ pint
Pure drier	⅛ pint	⅛ pint
Square feet it will cover	600 sq. ft.	600 sq.ft.

COLORED EXTERIOR PAINT.

All formulas given so far in this book make white paint. Where colored paint is wanted, it can be secured simply by adding tinting colors according to the shade or tint desired. These tinting colors are known as "colors-in-oil" and can be bought from any dealer who handles paint materials.

There is no limit to the number of shades and tints obtainable by coloring white-lead paint but only shades and tints of certain colors are desirable for exterior painting. Formulas for making some of these colors are given on page 19. Any of the colors listed can be varied indefinitely simply by increasing or decreasing the amount of tinting materials specified.

Most of the color formulas given call for the use of two or more tinting materials, but it should be remembered that simpler colors may be obtained by the use of one coloring pigment. Mixed with white-lead, varying quantities of lampblack will produce a pleasing range of grays, chrome yellow will produce yellows, chrome green will produce greens, Chinese blue will produce blues, Venetian red will produce pinks, and so on. See page 97.

Formulas for colored paint are at best always only approximate as some allowance must be made for slight variations in the strength and tone of different manufacturers' colors. Chrome yellows and ochres, for example, vary quite noticeably both in strength and tone.

All formulas for colored paint in the Handy Book on Painting are based on the use of John T. Lewis & Bros. Company's colors-in-

oil (Dutch Boy brand). These colors or the highest grade which can be obtained should be used. Cheap colors-in-oil lack tinting strength, fade out and never give satisfaction in any particular.

As explained under "Mixing the Paint" on page 10, the tinting colors should be added to the white-lead before the paint is thinned to painting consistency. Never put in all at once the entire quantity of color called for by a formula. Weigh out the color and put it in gradually, noting the effect. Stop when the desired shade or tint is arrived at, even if the formula calls for more. So also, if the color is too light, add a little more tinting matter until the color is exactly right.

Where tinting colors are used in sufficient quantity to alter the consistency of the paint, add one-half as much linseed oil and turpentine (by weight) as you add tinting material. If scales are not handy, measure the linseed oil and turpentine figuring a pound to the pint. The proportions of the added turpentine to the linseed oil should be the same as in the original formula.

For example: To make Cinnamon Brown according to formula on next page requires about 42 pounds of colors-in-oil to each 100 pounds of white-lead. Therefore, add 21 pounds, or 21 pints, more of linseed oil and turpentine than would have been used if the paint were to have been white.

FORMULAS FOR EXTERIOR COLORS.

The following formulas with the exception of those marked "No white-lead," are based on the use of 100 pounds of Dutch Boy white-lead:

Light Gray
1½ oz. lampblack

Pearl Gray
8 oz. French ochre
2 oz. lampblack

French Gray
1 lb. French ochre
2 oz. lampblack

Cream
3 lbs. French ochre

Yellow
2 lbs. 8 oz. med. chr. yellow

Slate
8 oz. lampblack

Buff
11 lbs. French ochre
1 lb. 9 oz. med. chr. yellow

Dark Olive Green
100 lbs. med. chr. green
22¾ lbs. med. chr. yellow
9 oz. lampblack
No white-lead

Grayish Blue Green
9 oz. med. chr. yellow
3 lbs. 12 oz. m. ch. green
¼ oz. lampblack

Grayish Brown
2½ lbs. med. chr. yellow
12 oz. lampblack
2½ lbs. Venetian red

Cinnamon Brown
1 lb. 6 oz. Venetian red
40 lbs. French ochre
11 oz. lampblack

Deep Yellowish Green
100 lbs. light chr. green
8 lbs. med. chr. yellow
1 lb. lampblack
No white-lead

Jade Green
5 lbs. med. chr. green
6 lbs. med. chr. yellow
9 oz. lampblack

Light Green Gray
2 lbs. 10 oz. lemon ch. yellow
2 oz. lampblack
14 oz. med. chr. green

Dark Brown
100 lbs. French ochre
28 lbs. 14 oz. Venetian red
5 lbs. 6 oz. lampblack
No white-lead

Clay Buff
11 lbs. 7 oz. French ochre
6 oz. Venetian red
1 oz. lampblack

Light Gray Buff
1 lb. 7 oz. French ochre
4 oz. med. chr. yellow
¼ oz. lampblack

Dark Greenish Olive
8½ lbs. med. chr. yellow
6½ lbs. med. chr. green
2¼ lbs. lampblack

Olive Gray
3 oz. French ochre
1¾ lbs. med. chr. yellow
6 oz. lampblack

Garnet
Indian red straight

Deep Olive Buff
1 oz. lampblack
1¾ lbs. lemon chr. yellow
7 oz. med. chr. yellow

Gray Buff
3¾ lbs. French ochre
1 oz. lampblack
4 oz. med. chr. yellow

Pale Gray Buff
1¼ lbs. French ochre
½ oz. lampblack

Yellow Brown
15 lbs. 11 oz. French ochre
2 lbs. 5 oz. Venetian red
9 oz. lampblack

Mahogany Red
100 lbs. Venetian red
47 lbs. 14 oz. Indian red
No white-lead

Cinnamon Buff
9¾ lbs. French ochre
5 oz. Venetian red
1 oz. lampblack

Dark Blue Green
3 lbs. 13½ oz. lampblack
6 lbs. 14 oz. Chinese blue
23 lbs. 10 oz. med. chr. green

HELPFUL HINTS IN MIXING AND APPLYING PAINT.

Be sure to mix plenty of paint, both for body and trim. It is better to have some left than to run short, especially if you are using a tinted paint. None will be wasted, for the left-over is useful for painting stoops, roof valleys or gutters and various odd places. Often the body and trim colors can be thrown together for such work, bringing the mass to a neutral color by adding lampblack.

Note carefully the order of putting in the coloring matter as instructed. If the lead is mixed to painting consistency before the coloring matter is added, the latter is apt to break up in lumps and make streaks when brushed out.

It is an excellent idea to strain paint thru cheesecloth or a wire strainer before using,

as this will be a further safeguard against lumpy colors and consequent streakiness. Paint also spreads further if strained.

Never use benzine or kerosene as a thinner instead of turpentine. This is sometimes done but they are inferior and injure the paint.

Use only the best liquid drier of some well-known manufacturer.

Dark driers as well as turpentine will slightly alter shades, and this must be taken into consideration.

On new wood, knots and sappy streaks should be shellacked with grain alcohol shellac, brushed out very thin before priming. When the lumber has very many knots, less oil and more turpentine may be used than the formula calls for, as too much oil on the knots causes later coats to draw and check.

Paint for shingle roofs should not be made as thick as for regular house-work. Use less white-lead and more linseed oil.

Do not do outside painting in extremely cold, frosty or damp weather. Painting may be done in winter if care is taken to choose periods when temperature is right (above 50°) and surfaces are dry.

Moisture in wood is the greatest foe to paint. Wood in new buildings is almost always water-soaked. Let it dry before painting.

Be equally careful when repainting. Wait for dry weather and examine the surface carefully for moisture before painting.

The surface to be painted should be smoothed down before the new paint is applied. If the old paint was white-lead and linseed oil, all that will be required is a dusting off. If hard paint was used it will be necessary to scrape the surface or perhaps

burn the old paint off with a gasoline torch. Don't paint over old, lumpy, scaling paint.

Brush the paint well into the pores of the wood. Do not allow the paint merely to flow from the brush.

Use nothing but putty made of linseed oil and equal parts of white-lead and whiting for filling nail-holes, cracks, knot-holes, dents and other defects in the surface. These places should be filled thoroly after applying the priming coat. Putty made of petroleum and ground cliffstone sand often mars what would otherwise be a good painting job, by making yellow nail-holes and cracks.

Preparations of wood alcohol (deadly poisonous), cheap shellac, rosin, etc., are apt to cause knots to turn yellow.

It is well to mix the paint 24 hours before being used, but if the paint is to stand long don't put the drier in until just before application. It is better not to allow paint to stand for long periods. It becomes fatty.

Two thin coats of paint are better than one thick coat.

Do not be tempted by *any* consideration to use a substitute for pure linseed oil. Plausible arguments are often urged, especially when linseed oil is high in price, why substitutes for linseed oil should be used, but do not be misled. Linseed oil is the only oil that will wear. You risk the loss of all your labor and the cost of all your other materials by using any other oil.

Allow plenty of time between coats for the paint to dry. Exterior work should be allowed to dry two or three days before the next coat is applied and interior work at least twenty-four hours.

INTERIOR PAINTING

The decoration of interiors presents a problem quite different from the painting of exteriors. Paint used inside is not exposed to the weather; consequently it is mixed differently from paint intended for outside use. A large part of interior surfaces is plaster; plaster is treated differently from wood. Glossy paint is invariably used on exteriors; the decoration of interiors calls for a variety of finishes (lustreless, semi-gloss, full gloss, etc.), and a range of color effects which includes those more delicate and elusive tints unsuitable for exterior use.

The points to consider in the treatment of interior surfaces are beauty, cleanliness and economy. Beauty involves color and style of finish. Cleanliness depends upon washability and consequent freedom from dirt and other impurities. Economy has to do with cost and years of wear. These three results are best reached by the use of paint made with pure white-lead.

SOFT-TONE EFFECTS.

Most inside painting nowadays is done in dull or so-called "flat" effects. Up to a few years ago, these flat effects were always obtained with white-lead by thinning it with turpentine, instead of linseed oil which gives a glossy finish. At that time, special flatting oils for use with white-lead were developed. These flatting oils are largely superseding turpentine and the handsome, durable, washable, soft-toned finishes which they give is resulting in a marked increase in the popularity of the painted wall, especially for homes.

One of the most successful flatting oils on the market today is our own Dutch Boy flatting oil. It flats white-lead better than turpentine does, yet binds the pigment particles together with the tenacity of pure linseed oil, insuring a paint film which will not chip off.

Dutch Boy flatting oil is designed especially for use with Dutch Boy white-lead. Used with our white-lead, it produces a soft, glossless finish that has a depth of tone and a richness which most flat paints lack.

Aside from the remarkable beauty of a Dutch Boy white-lead and Dutch Boy flatting oil finish, the paint merits consideration from the standpoints of cleanliness and service. The hard, tile-like film it forms stands frequent washing with warm water, mild soap and a soft cloth or a sponge and can thus be kept absolutely clean and sanitary. The durability of the paint is not affected in any way and there is no unsightly streaking as often occurs when a less stable paint is washed.

Dutch Boy flatting oil is sold in one and five gallon cans, bearing the famous Dutch Boy trademark as a guaranty of excellence. Complete directions for use are printed on each can.

AREA OF ROOM SURFACES.

In estimating the number of square feet in a room to be painted, it is the practice to consider the walls, ceiling and woodwork as separate units. It is necessary to do this as paint for plaster is mixed differently from that for wood and the ceiling and sidewalls are not usually painted the same color.

SQUARE FEET IN WALLS.

To ascertain the area of wall surface to be painted, multiply the linear measurement around the walls of the room (perimeter) by the height of the walls (measured from baseboard to picture moulding or ceiling). From the area thus obtained, deduct the area occupied by doors and windows. Divide the result by 600, which is approximately the number of square feet of surface one gallon of paint will cover. The answer is the number of gallons of paint needed for one coat.

SQUARE FEET IN CEILING.

To determine the area of the ceiling, multiply together its two dimensions. To this figure, add the area of the four strips of wall surface above the picture moulding. Divide the total area thus obtained by 600 which gives the quantity of paint needed for one coat.

SQUARE FEET OF WOODWORK.

Treat all doors as if they were plain rectangular shapes, multiplying height by width to arrive at area. For other woodwork, such as window frames, baseboards, moulding, etc., simply figure ⅗ gallon of paint for every one hundred feet.

AREA OF IRREGULAR SHAPES.

If walls or ceiling are irregular in shape, divide into rectangles, calculating separately the area of each rectangle. The sum of the areas gives the total amount of surface to be

painted and dividing by 600 gives the number of gallons of paint needed for one coat.

NUMBER OF COATS.

Three coats are recommended for interior plaster or wood which has never before been painted — a priming coat, a second or body coat, and a third or finishing coat. If the plaster or wood has been painted before, two coats are sufficient, and the priming coat may be omitted. The old paint, if in good condition, serves as a priming coat.

TWO-COAT WORK.

If a two-coat job on new work is desired, use the priming and finishing coats given in the formulas which follow, omitting the second coat. To make two coats cover better, mix the first coat a little darker than the second coat.

Two coats cannot be expected to cover as well as three nor to give as fine a finish. In fact, it is not considered the best practice to use only two coats on new work. Experience has shown that three coats are necessary for entirely satisfactory results, and it is best therefore to play safe always by using three coats as recommended in the paragraph above headed "Number of Coats."

HOW TO MIX THE PAINT.

To mix paint for interior work from white-lead, follow the mixing directions appearing on page 10, under the heading "Steps To Be Taken." The only difference is that flatting oil or turpentine is used in place of linseed oil.

PAINTING PLASTER

It is best always to allow plaster at least six months to dry out thoroly or "set" before attempting to paint it. Fresh plaster contains a certain amount of free alkali which has a tendency to keep paint from drying properly and to cause colors to bleach out.

A good many people do not care to let their walls go unpainted for a whole year. For this reason, painters resort to the use of sizes or various chemical methods, such as treating the surface with a solution of zinc sulphate in water, to counteract the action of the free alkali and also to seal the pores of the plaster.

USE OF SIZES.

Two particular classes of sizes in more or less general use are glue sizes and varnish sizes. Both have given good and bad results according to whether they have been used properly or not. The safest thing to do is to purchase a size made by a manufacturer known to be reliable and to use it in accordance with the directions on the package.

Glue sizes are usually applied over the priming coat of paint. The reason for this practice is that, when the priming coat is on, it may be found that a size is not needed.

Varnish sizes are applied to the plaster and usually take the place of the priming coat.

FIRE-CRACKS.

Plaster often shows fine, hairlike cracks due simply to the shrinkage of the plaster as it dries out. These cracks are called "fire-cracks." Sometimes fire-cracks in bare plaster are invisible but become noticeable after

the first coat of paint has been applied due to the fact that they absorb oil from the paint, leaving a "flat" line on the surface.

A proper size over the priming coat usually seals fire-cracks.

If fire-cracks are evident before the priming coat is applied, the size is sometimes rubbed on the plaster with a sponge or cloth to seal the cracks.

PREPARING THE SURFACE.

Before applying any paint, be sure that the plaster or old paint is clean and smooth. Go over the wall very lightly with fine sandpaper or a wide putty knife to remove grit and any loose plaster or paint, taking care not to scratch the surface.

Fill all cracks and holes with plaster of paris. In the case of large cracks, open them up clear down to the lath, soak the edges with water, and then fill the openings with plaster of paris. Be sure to level off the plaster of paris properly so that the filled places will not form ridges in the wall. When the plaster of paris has dried thoroly, sandpaper down to a smooth, even surface.

Walls that have been kalsomined should be washed clean before applying white-lead paint.

FORMULA NO. 11—PRIMING COAT.

(PLASTER WALLS—INTERIOR).

100 pounds Dutch Boy white-lead
*7 gallons pure kettle-boiled linseed oil
1 gallon pure turpentine

* If boiled linseed oil cannot be obtained, 7 gallons raw linseed oil with 3 pints drier may be used instead and will in most cases give satisfactory results. Boiled oil is much superior, however, and will often obviate trouble when conditions are difficult. It seals pores in the plaster and prevents suction. Contrary to the belief of many, boiled oil can be had.

The preceding formula makes about 11 gallons of paint which will cover about 6,500 square feet, one coat.

FORMULA NO. 12—SECOND COAT.

(PLASTER WALLS—INTERIOR).

100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil
—or—
*100 pounds Dutch Boy white-lead
1½ gallons pure raw linseed oil
1½ gallons pure turpentine
1 pint pure drier

The above formulas make about 6 gallons of paint which will cover about 3,600 square feet, one coat.

FORMULA NO. 13—THIRD COAT, FLAT FINISH.

(PLASTER WALLS—INTERIOR).

100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil
—or—
*100 pounds Dutch Boy white-lead
2½ gallons pure turpentine
1 pint light enamel varnish
½ pint pure drier

The above formulas make about 6 gallons of paint which will cover about 3,600 square feet, one coat.

* All formulas for the painting of plaster which are marked with an asterisk are alternates to be followed only if turpentine is to be used instead of Dutch Boy flatting oil.

FORMULA NO. 14—THIRD COAT, EGG-SHELL FINISH.

(PLASTER WALLS—INTERIOR).

100 pounds Dutch Boy white-lead
1½ to 2 gallons Dutch Boy flatting oil
¾ gallon light enamel varnish

—or—

*100 pounds Dutch Boy white-lead
½ gallon light enamel varnish
2½ gallons pure turpentine
¼ pint pure drier

The first formula above makes from 5 to 5½ gallons of paint which will cover from 3,000 to 3,300 square feet, one coat; the second formula makes about 6 gallons of paint which will cover about 3,600 square feet, one coat.

FORMULA NO. 15—THIRD COAT, OIL-GLOSS FINISH.

(PLASTER WALLS—INTERIOR).

NOTE: The following formula should be used only for dark colors, as light-colored paint containing considerable raw linseed oil will yellow badly when used on interiors. Where a light-colored, oil-gloss finish is required, follow Formula No. 16 or use an enamel.

100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
¼ gallon Dutch Boy flatting oil
1 pint pure drier

—or—

*100 pounds Dutch Boy white-lead

* All formulas for the painting of plaster which are marked with an asterisk are alternates to be followed only if turpentine is to be used instead of Dutch Boy flatting oil.

3 gallons pure raw linseed oil
¼ gallon pure turpentine
1 pint pure drier

The preceding formulas make about 6 gallons of paint which will cover about 3,600 square feet, one coat.

FORMULA NO. 16—THIRD COAT, VARNISH GLOSS FINISH.

(PLASTER WALLS—INTERIOR).

3 pounds Dutch Boy white-lead (mixed and drawn as explained below)
1 gallon light enamel varnish

This formula makes a little more than a gallon of paint which will cover about 700 square feet, one coat.

To mix and draw white-lead as required for varnish gloss finish, mix the white-lead with turpentine, 3 pounds to 1 gill, and let the mixture stand overnight or longer to settle. Then draw off the thinners from the top and add the light enamel varnish.

APPLYING FLAT PAINT.

The beauty of a wall painted with flat paint depends to a large degree on how the paint is applied, especially the final coat. Flat paint dries more quickly than gloss paint and brush-marks, laps and joints will show if the work is not done properly.

Start at one end of the wall at the top, painting a section or "stretch" about three feet wide and working down (not across) the wall.

When the bottom of the wall is reached, start another stretch about the same width, joining it to the first one and working down the wall as before. Repeat the process until the whole wall is painted, making sure to work fast enough to keep one section from drying before another is joined to it.

If the paint used is made with Dutch Boy flatting oil, no trouble will be experienced in joining sections or catching laps. Paint made with Dutch Boy flatting oil sets slowly so that there is no danger of the paint in one stretch becoming set before another can be joined to it. This is one of the reasons for the increasing popularity of Dutch Boy flatting oil.

Flat paint should be flowed on. You will find that the paint flows together, much as varnish does, forming a nice, even film.

STIPPLING.

Paint for interior walls is oftentimes stippled. A stippled effect is produced simply by patting the paint, before it has set, with a stiff brush producing a rough texture.

Paint to be stippled is usually mixed thicker than that not to be stippled and may be varied in thickness according to the degree of stippling desired. The stippling brush brings the little points of paint out as the brush leaves the surface and these points of paint tend to flow back more completely with thin paint and less completely with thick paint. Thin paint is produced by the use of more flatting oil or turpentine with white-lead. Vice versa, thick paint is produced by the use of less thinners in the paint.

FIGURED AND MOTTLED FINISHES.

Delightful effects in two tones can be produced with paint on interior walls by methods which cost little, if any more, to execute than one-tone painting. One way is to apply a ground coat of one color and after it is dry to apply a harmonious tint. While the latter is still wet tamp the wet surface with a wad of cloth, paper or a sponge, lifting some of the upper coat. This produces a mottled effect especially if a slight twisting motion is given as the paper or cloth touches the wet paint.

Another method is the one described below which differs in that a wad of crumpled newspaper is *rolled* over the wet finishing coat. This gives a more distinct design and a more uniform effect.

First prime the surface in the usual way. If the wall has been previously painted, it is ready for the first of the two coats of color and no priming coat is necessary.

An eggshell finish is recommended for both the ground coat and the finishing coat tho flat paint if made with flatting oil will give satisfactory results. A good formula for an eggshell ground coat is one based on 100 pounds of Dutch Boy white-lead, 1¾ gallons Dutch Boy flatting oil and 1 quart linseed oil. If possible use boiled linseed oil. If raw oil is used add a gill of drier.

Apply the colored ground coat in the customary way and allow it to dry thoroly. Then mix a second color which will harmonize with the first and cover a strip of the wall about three feet wide. The second coat of color or

finishing coat should also be an eggshell. It should be thinner than the ground coat. Mix it in the proportion of 100 pounds Dutch Boy white-lead, 2⅜ gallons Dutch Boy flatting oil and 1 pint linseed oil.

While the three-foot strip of the finishing coat is still wet, take a double sheet of newspaper and with both hands crumple it tightly into an elongated wad about ten or twelve inches long. The idea of crumpling the paper into a wad instead of rolling it carefully is to make it present a broken and rough surface to the wall. Starting from the top left-hand corner of the freshly painted strip and working downward, turn the roll of tightly crumpled paper over and over with the fingers, pressing the paper firmly enough against the wall to keep it from slipping.

As the wad is turned over and over those parts of the broken surface of the paper which come in contact with the fresh paint will lift some of the paint, thus uncovering the ground color beneath. When the bottom of the wall is reached, repeat the process, beginning again at the top and slightly lapping over the strip just completed so as to leave no seam. When the first three-foot strip of wet top color has been gone over, put on another three-foot strip of color and proceed as before.

The paper used must be recrumpled as rapidly as it becomes covered with paint so that a new dry surface may be presented to the wall. After doing one strip from ceiling to floor, a new ball of paper will likely be needed.

The kind of paper used to lift the paint has a bearing on the effect. A newspaper tightly crumpled as described will be found most de-

sirable in a majority of cases, but other kinds of paper may be used. The softer the paper the more paint will be lifted and the pattern will be composed of larger units with softer outlines than if a stiffer paper is used. The sharp edges of stiff paper will uncover smaller units and give sharper outlines.

If a blur should accidentally be made, put a brushful of the finishing color over the spot and then reroll it. Any blank spaces which may have been left when going over the wall can be touched up by rerolling the spot while the paint is still wet.

The finished work is extremely effective, and it is novel. The wall is not mottled in the way that light tamping or wiping with a wad of cloth or paper mottles it. Neither has it the exactness and regularity of the all-over design repeated by means of a stencil. It is something between the two. It suggests a repeated figure, but the eye is soon lost in the complexity of the design and discovers that there really is no repetition. In this there is a suggestion of free-hand painting and there is a spontaneous beauty which at times, with certain combinations of colors, makes one think of autumn leaves flying in the wind.

Naturally the general effect depends upon the happy selection of the two colors used as well as upon the form of design cut out by the rolling paper. Either a clear-cut or soft effect may be produced, depending on the choice of color. When a light color is used over a dark one or vice versa, the designs will be clear cut and distinct. The same effect will be gained by using contrasting colors. When colors are nearly alike in tone, the pattern will be softly outlined. This effect is desirable for bedrooms and rest rooms. For

hallways, living rooms and dining rooms the former will probably be found better.

When it comes to redecorating over the figured effect, one coat will give a new color scheme in a three-tone effect. Simply apply the new coat of color over the old finishing coat and roll the new color with paper while the paint is wet.

There are practical as well as artistic advantages to be derived from this figured treatment. Firecracks which are so bad that no plain coat will hide them will not show thru the two-tone figured effect. There is no possibility of laps and brushmarks. The walls can be more satisfactorily washed than plain walls because careless streaking will not show up.

STRIPING.

Striping is probably one of the simplest and cheapest ways of adding interest to a room that the decorator has at his command. It is effected on either woodwork or painted walls. A narrow painted stripe either of a contrasting color or of the same color as the wall only darker, is used to outline the picture molding, baseboard, door and window trim. Narrow moldings in the trim and the panelings of the doors may be followed. The stripe should vary from one-quarter to two inches in width according to the size of the room and the width of the trim.

While the use of a color that contrasts with the woodwork or painted wall is a safe rule to follow, there are other considerations which might influence the decorator in his choice of color. If light cretonnes are selected for hangings, a light stripe similar to one of the colors in the pattern will be effective. Dark

hangings and furnishings should be closely matched with a dark stripe. If the woodwork has been painted pale yellow or gray, black stripes will give to the room a smart and pleasing appearance.

Striping should be done with what is known as a striping brush. It has bristles from two to three inches in length, and varies in width according to the size of the stripes to be painted.

If the wall or woodwork to be striped has a flat finish, the paint to be used in striping should be made according to formula No. 13 (page 29). If the striping is to be done over an eggshell finish, the paint should be made according to formula No. 14 (page 30).

PANELING.

Paneling is effective if the proportions of the room are good. Small rooms where the furniture is of an informal nature are better not paneled. In the case of large but low ceilinged rooms, narrow vertical panels will create the impression of height. In extremely high ceilinged rooms, panels that are longer horizontally than they are vertically will apparently lower the ceiling line.

To produce a paneled effect with paint, the walls if unpainted, should be worked up in the usual way to furnish a proper foundation. The first and second coats should be made according to formula No. 11 (page 28) and formula No. 12 (page 29), respectively. If a flat finish is desired use for the third coat formula No. 13 (page 29). If an eggshell finish is preferred the third coat should be made according to formula No. 14 (page 30).

In the case of a repainting job, formula No. 11 can be omitted.

The final coat should be tinted to a suitable background color. When dry, areas should be lined off in the size panels desired, and then should be painted over with a striping brush. The lines painted may be from one-half inch to three inches in width, depending on the size panel desired.

In selecting a striping color it is always well to choose one that is closely related to the wall color. On a buff-colored side wall, for example, a soft tan would make an excellent striping color for the paneling. For a pale yellow-green side wall, a little deeper shade of the same color would appear well; and for a light gray side wall, a striping might be worked out in a deeper gray containing a touch of blue.

Architectural paneling may be treated in many ways. The wall surface outside the panel is usually painted a little lighter in color than the center of the panel and the molding. The center may be made more interesting with two-tone figured or mottled effects. The moldings are oftentimes painted a different color or striped with a narrow line of a contrasting color. This treatment lends itself especially well to narrow rooms or long halls.

In rooms in which wall board is used an effective paneled treatment can be worked out by painting the moldings that cover the seams in the board with a contrasting color.

STENCILING.

Stenciling if used sparingly and with a definite function to perform, has many interesting possibilities as a wall decoration. It is very

effective when used in single units or as a continuous pattern.

Care must be taken, however, to select the proper stencil for the proper room and the proper color for the proper stencil. Floral patterns which might appear effective in the home should not be used in public buildings. Geometric designs are suitable for stencil patterns in churches, public libraries, theatres and the like, while in the library of a private home leaf effects in soft tones of green look well. A conventional fruit pattern, on the grape order, is suited to the dining room.

Stencils in public buildings should be executed in solid, contrasting colors, even tho these colors are light and on a polychrome order. In the home, on the other hand, closely related colors in the harmony of sequence, will be found more effective.

A neat, compact design, of which there is a wide variety, is very attractive as a center decoration for panels. A well-chosen stenciled design on the doors adds the artistic effect that handwork always produces in a room.

A frieze blocked out with molding is often used in rooms with high ceilings. If a stenciled design is placed in each block, or in every other one, an attractive and distinctive effect is obtained.

Neat stenciled designs, broken with dots or squares, are excellent substitutes for wood paneling. They may be used to divide both the wall space and ceiling. Individual motifs may then be placed in the panels.

To prepare plaster walls for stenciling, the surfaces if unpainted should be worked up in the usual way with three coats of paint made according to formulas No. 11 (page 28),

No. 12 (page 29) and No. 13 (page 29), respectively. A flat finish will be the result. If an eggshell finish is preferred, the third coat should be made according to formula No. 14 (page 30). In the case of a repainting job, formula No. 11 can be omitted.

The final coat should be tinted to a suitable background color. When dry, the surface is ready for stenciling.

The color selected for the stenciling should be placed in paste form on a palette or piece of glass and may be thinned slightly, if necessary, to thick paste form with Dutch Boy flatting oil. A stencil brush, having short stiff bristles usually set in tin, should be dipped in the paste and then pounced on the palette until the paint adhering to the tips of the bristles has been reduced to a uniform amount.

With the stencil held firmly to the surface by pins or by the hand, the color should be applied thru the cut-out pattern by pouncing with the brush. Any attempt at a rubbing motion should be avoided as it will invariably produce imperfect work. Extreme care should be taken not to slide the stencil after the paint has been applied, but to lift it off in a clean, quick manner, always remembering to wipe any paint from the back of the stencil before it is put in position for the execution of the next motif.

TWO-TONE GLAZE.

With two-tone glaze some very pleasing effects may be obtained on walls and woodwork. As the painter uses the term, a "glaze" is a thin transparent liquid, slightly tinted with a transparent pigment that is applied to a painted surface in order to add depth of tone. The liquid is usually a very thin varnish.

Dutch Boy flatting oil is excellent for the purpose.

To produce a two-tone glaze, the walls if unpainted should be worked up in the usual way to furnish a proper foundation by applying three coats of paint made according to formulas No. 11 (page 28), No. 12 (page 29) and No. 14 (page 30), respectively. In the case of a repainting job, formula No. 11 can be omitted. The third or final coat should always have an eggshell finish so that the glazing color, afterward applied, will wipe out easily.

The final coat of paint may be tinted to any shade from a light cream down to a dark tan. When dry a suitable glaze color is brushed on and wiped off with a cloth while the glazing coat is still wet. The glaze color is made of twelve ounces of tinting material to a gallon of Dutch Boy flatting oil. Such tinting materials as burnt umber, burnt sienna, raw umber and the like should be used.

When the glaze color has been wiped off it will be discovered that a sufficient amount of pigment remains in the crevices of the woodwork or wall to produce an interesting antique effect. A gray tinted glaze over bright colored woodwork is a happy choice. The rich effect of old gilded leather may be obtained by using a brown glaze over orange on the walls.

TIFFANY FINISH.

A blending of various colors sometimes called "Tiffany" finish, gives to walls a beautiful mottled effect, as if light were shining on them through stained glass windows. Tiffany finish is especially appropriate for libraries,

assembly rooms, schools, churches, banks, and offices, and may be used to good effect in homes where the rooms are large. The colors should be kept soft and unobtrusive. The treatment is applicable either on plain plastered walls or on walls covered with any kind of fabric or on any of the composition boards used as a substitute for plaster.

To produce Tiffany finish, paint the walls in the usual way, applying three coats—a priming coat, a second coat and a third coat. (See formulas Nos. 11, 12 and 13.) Tint the last two coats to an ivory color by mixing with each 100 pounds of white-lead, 12 ounces of raw sienna, 7 ounces of medium chrome yellow and ¼ ounce of lampblack. Stipple the third coat with a ball of cheesecloth.

The finishing coat consists of semi-transparent colors, called glazing or lake colors, which require only thinning with flatting oil, raw linseed oil or turpentine. If only one glazing color is to be used, cover the wall with it and, while the color is still wet, wipe it away in spots, letting the ivory ground show through more in some places than in others. After wiping in the high-lights, tap the edges lightly with a ball of cheesecloth until the blending is satisfactory. Then stipple all over with a stippling brush. If several glazing colors are desired, the process is similar except that each color must be prepared in a separate can and applied in patches with its own brush.

Frequently the tone of the finish is made darkest at the baseboard, gradually lightening all the way up the wall. Sometimes the color is put on in horizontal bands and then blended. Some good combinations are blue and orange, blue and brown, green, red and yellow, light blue and white, bronze and copper.

A somewhat different method is to paint upon the ivory ground patches of opaque color, such as Venetian red, chrome yellow, or Chinese blue, depending upon the tone desired, then blending those colors in the way already described, and finally applying over all a coat of glazing color, of burnt sienna, for example. This glazing coat is then thoroly stippled. How the colors are applied is less important than the selection of them and the skill used in blending them.

PAINTING FABRIC COVERINGS.

To overcome defects in plaster walls or to anticipate others which it is feared may develop, plaster walls are sometimes covered with muslin or a specially prepared fabric of some kind which is then painted. No difficulties are encountered in painting such fabric coverings. The painting is done in the regular way just as if plaster were being painted, and the finished job is practically indistinguishable from ordinary painted plaster. If the fabric has been prepared with size no priming coat is necessary.

PAINTING WALL BOARD.

Composition wall board, which is used on many interiors to take the place of plaster, can be painted with satisfactory results. Such surfaces may be treated in the same way as new plaster walls and the painting should be done as directed under "Painting Plaster."

PAINTING INTERIOR WOOD

The same general principles which apply to the painting of exterior wood may be laid

down for the painting of interior wood. The paint is applied in the same way and the same number of coats are used, but the formulas for mixing differ due to the fact that paint on interior wood is not exposed to the sun and rain and the finish may be a full gloss, a dead flat, or any intermediate finish.

Before mixing the paint, refer to mixing directions on page 10, under the heading "Steps to Be Taken." Also see "Helpful Hints in Mixing and Applying Paint" on page 20.

PAINTING NEW INSIDE WOOD.

FORMULA NO. 17—PRIMING COAT.

(NEW WORK [WOOD] INSIDE).

100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
4 gallons Dutch Boy flatting oil
1 pint pure drier

—or—

*100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
4 gallons pure turpentine
1½ to 2 pints pure drier

The preceding formulas make about 10 gallons of paint which will cover about 5,750 square feet, one coat.

USE OF THINNERS.

As on outside wood, the painter may exercise his discretion in the use of the thinners prescribed—thus on white pine, poplar and

* Formula marked with an asterisk is an alternate to be followed only if turpentine is to be used in place of Dutch Boy flatting oil.

basswood, which more readily absorb oil, increase the quantity of linseed oil. On yellow pine, cypress, spruce and hemlock, use less linseed oil and more flatting oil or turpentine and drier.

FORMULA NO. 18—SECOND COAT.

(NEW WORK [WOOD] INSIDE).

100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil

—or—

*100 pounds Dutch Boy white-lead
1½ gallons pure raw linseed oil
1½ gallons pure turpentine
1 pint pure drier

The preceding formulas make about 6 gallons of paint which will cover about 3,600 square feet, one coat.

FORMULA NO. 19—THIRD COAT, FLAT FINISH.

(NEW WORK [WOOD] INSIDE).

100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil

—or—

*100 pounds Dutch Boy white-lead
1 pint light enamel varnish
3 gallons pure turpentine
½ pint pure drier

The preceding formulas make about 5 gallons of paint which will cover about 3,600 square feet, one coat.

* Formulas marked with asterisks are alternates to be followed only if turpentine is to be used in place of Dutch Boy flatting oil.

FORMULA NO. 20—THIRD COAT, EGG-SHELL GLOSS FINISH.

(NEW WORK [WOOD] INSIDE).

100 pounds Dutch Boy white-lead
1½ to 2 gallons Dutch Boy flatting oil
¾ gallon light enamel varnish

—or—

*100 pounds Dutch Boy white-lead
¾ gallon light enamel varnish
1½ to 2 gallons pure turpentine
½ pint pure drier

The above formulas make from 5 to 5½ gallons of paint which will cover from 3,000 to 3,300 square feet, one coat.

FORMULA NO. 21—THIRD COAT, OIL-GLOSS FINISH.

(NEW WORK [WOOD] INSIDE).

IMPORTANT: See note under Formula No. 15, page 30.

100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
¼ gallon Dutch Boy flatting oil
1 pint pure drier

—or—

*100 pounds Dutch Boy white-lead
3 to 3½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

The first formula above makes about 6 gallons of paint which will cover about 3,600 square feet, one coat; the second formula makes from 6 to 6½ gallons of paint which will cover from 3,600 to 3,900 square feet, one coat.

* Formulas marked with asterisks are alternates to be followed only if turpentine is to be used in place of Dutch Boy flatting oil.

*100 pounds Dutch Boy white-lead
¾ gallon light enamel varnish
1½ to 2 gallons pure turpentine
½ pint pure drier

The preceding formulas make from 5 to 5½ gallons of paint which will cover from 3,000 to 3,300 square feet, one coat.

FORMULA NO. 25—SECOND COAT, OIL-GLOSS FINISH.

(OLD WORK [WOOD] INSIDE).

IMPORTANT: See note under Formula No. 15, page 30.

100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
¼ gallon Dutch Boy flatting oil
1 pint pure drier

—or—

*100 pounds Dutch Boy white-lead
3 to 3½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

The first formula above makes about 6 gallons of paint which will cover about 3,600 square feet, one coat; the second formula makes from 6 to 6½ gallons of paint which will cover from 3,600 to 3,900 square feet, one coat.

SPECIAL INTERIOR WOOD FINISH.

Interior woodwork sometimes calls for an especially fine finish. Where this is the case the following steps should be taken:

* Formulas marked with asterisks are alternates to be followed only if turpentine is to be used in place of Dutch Boy flatting oil.

REPAINTING INSIDE WOOD.

FORMULA NO. 22—FIRST COAT.

(OLD WORK [WOOD] INSIDE).

100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil

—or—

*100 pounds Dutch Boy white-lead
1 gallon pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

The preceding formulas make about 6 gallons of paint which will cover about 3,600 square feet, one coat.

FORMULA NO. 23—SECOND COAT, FLAT FINISH.

(OLD WORK [WOOD] INSIDE).

100 pounds Dutch Boy white-lead
2 to 3 gallons Dutch Boy flatting oil

—or—

*100 pounds Dutch Boy white-lead
1 pint light enamel varnish
2 gallons pure turpentine
½ pint pure drier

The first formula above makes from 5 to 6 gallons of paint which will cover from 3,000 to 3,600 square feet, one coat; the second formula makes about 5 gallons of paint which will cover about 3,000 square feet, one coat.

FORMULA NO. 24—SECOND COAT, EGG-SHELL GLOSS FINISH.

(OLD WORK [WOOD] INSIDE).

100 pounds Dutch Boy white-lead
1½ to 2 gallons Dutch Boy flatting oil
¾ gallon light enamel varnish

—or—

* Formulas marked with asterisks are alternates to be followed only if turpentine is to be used in place of Dutch Boy flatting oil.

(*a*) The woodwork should be smooth, dry and cleaned of all dust before painting. Apply first a coat of orange shellac, thinned with grain alcohol. Let the shellac harden twenty-four hours and then sandpaper down. Apply a coat of paint mixed according to the following formula. (To insure whiteness, mix the lead with turpentine, 100 lbs. to 2 gals., and let it stand overnight or longer to settle. Then draw off the thinners from the top and bring to brushing consistency by adding turpentine and light enamel varnish.)

FORMULA NO. 26—BODY OR FIRST COAT OVER SHELLAC.

(NEW WORK [WOOD] INSIDE).

100 pounds Dutch Boy white-lead (drawn as above)
1½ gallons turpentine
¼ gallon light enamel varnish
¼ pint pure drier

This formula makes about 4½ gallons of paint and will cover about 2,700 square feet, one coat.

(*b*) Old woodwork should be rubbed smooth with sandpaper, steel shavings or steel wool until all gloss has disappeared. Then apply one coat of paint mixed according to Formula No. 26.

When the first coat on either new or old work is dry and hard, putty all defects such as knot-holes, dents, cracks, etc., with a pure linseed-oil putty composed of equal parts of white-lead and whiting.

(*c*) From this point, new and old work should be treated alike. When first coat is

dry, rub down with No. 0 sandpaper. Repeat coats of Formula No. 26 as many times as is necessary to bring the surface to clear white with no dark places showing thru.

(*d*) Next, make an enamel by adding Dutch Boy white-lead to light enamel varnish in the proportion of three pounds of white-lead to one gallon of varnish. Break up the white-lead with a little turpentine to a thick paste and then mix well with the varnish. Apply as paint. After the enamel is dry, rub down with pumice in water and apply a second coat of the same enamel.

This completes full-gloss finish.

For silk finish rub down the last coat with fine pumice and water, clean off and finish with rotten stone and sweet oil. Polish finally with a chamois. (Or, expense and trouble of rubbing down last coat may be avoided by applying one coat of dull varnish.)

To obtain ivory effect, tint last coat with just enough raw sienna to turn it off the white, before applying enamel. The enamel coats must be tinted in like manner.

COLORED INTERIOR PAINT.

The preceding formulas for interior painting, both on plaster and on wood, produce white paint. If colored paint is desired, the white paint can be tinted by the addition of proper tinting colors before all the thinners are added, as explained on page 10, under "Mixing the Paint." See also section on "Colored Exterior Paint" on page 17, which gives some valuable pointers on the selection and use of colors-in-oil.

STAINS.

In staining new wood a very thin coat of shellac, particularly if the wood is soft, should first be applied to make an even foundation for the stain. If this precaution is not taken, the stain will strike in here and there, appearing dark in some spots and light in others. When the shellac is dry, the stain selected can be applied over it.

Formulas for some of the most popular stains are as follows:

Cherry stain: To two pounds of burnt sienna and one pound of raw sienna, add one-half gallon boiled linseed oil, one quart best brown Japan and one-half gallon spirits of turpentine. If the burnt sienna is more of a brown than the fiery red tone, then omit the raw sienna but use three pounds burnt sienna in place of two.

Mahogany stain: To two pounds of burnt sienna, one pound of rose pink and one-quarter pound of dropblack add one-half gallon boiled oil, one quart best brown Japan and one-half gallon of turpentine. Vary the proportion of dropblack to the depth desired for this stain.

Light Oak stain: To two pounds of raw sienna and one-half pound of raw umber, add one-half gallon of boiled oil, one quart of best brown Japan and one-half gallon of turpentine. If the raw sienna is inferior in staining power, omit the raw umber and use three pounds of raw sienna.

Walnut stain: To two pounds of burnt umber add one-half gallon boiled oil, one quart of best brown Japan and one-half gallon of turpentine. Should the umber be very dark, add one-half pound of burnt sienna, but if black walnut stain is desired, add Vandyke brown in same proportion.

FORMULAS FOR INTERIOR COLORS.

In all the following formulas, 100 pounds of Dutch Boy white-lead are to be used:

Light Tan
9 lbs. 11 oz. French ochre
5 oz. Venetian red
2 oz. lampblack

Ivory
11 oz. French ochre

Pale Smoke Gray
1½ lbs. French ochre
3 oz. lampblack
1 oz. Venetian red

Pale Grayish Blue
9 oz. med. chr. green
1 oz. Chinese blue
½ oz. lampblack

Salmon
2 oz. med. chr. yellow
4 oz. Venetian red

Buff
1 lb. 8¼ oz. French ochre
6 oz. med. chr. yellow

Light Olive Green
1 lb. 12½ oz. med. chr. yellow.
1 oz. lampblack

Medium Brown
13 oz. med. ch. yellow
1 2-3 oz. lampblack
19 lbs. 14 oz. French ochre

Light Gray Green
3 lbs. 5 oz. med. chr. yellow
7 1-3 oz. lampblack

Light Brownish Gray
1 2-3 oz. lampblack
5 lbs. French ochre

Medium Green
1 3-4 oz. lampblack
5 lbs. 2 oz. med. chr. green
3 lbs. 4 oz. med. chr. yellow

Deep Grayish Blue
1 lb. 5 3-4 oz. Chinese blue
7 1-3 oz. lampblack
3 lbs. 6 1-3 oz. med. chr. green

Light Lemon Yellow
1 1-5 oz. med. chrome green
5 oz. med. ch. yellow

Pale Gray
¼ oz. lampblack
15 oz. French ochre

Pale Blue Green
8 oz. med. chrome green
2¼ oz. med. chr. yellow

Dark Blue Green
16 lbs. 1 1-3 oz. med. chr. green
1 lb. 11 oz. Chinese blue
1 lb. 9 oz. lampblack

HOW TO FINISH THE FLOOR

PAINTING THE FLOOR.

There are two kinds of floors that require painting: new floors laid with soft wood, such as hemlock or white pine; old floors that have become worn, scratched, stained or otherwise marred. New floors of hard wood, such as oak, ash, maple or yellow pine may be painted, if desired, but waxing or varnishing or staining makes a handsomer finish.

Success with newly painted floors depends chiefly upon the choice of right materials and knowing how to use them. In fact, the only important particular in which the film of floor paint needs to differ from that on a window frame, door or the side of a house is the finish. The priming coat must anchor firmly into the wood, it must dry thoroly and the outer coat must become hard before the floor is used.

PREPARING THE SURFACE.

The same precautions must be taken in preparing to paint a floor as in the preparation of any other surface. If the floor is newly laid make sure that the wood is dry and smooth and clean. If the floor has an old coat of paint that is rough and scaly or thick and gummy it should be cleaned down to the wood either by scraping, planing, burning or by the use of a liquid paint remover. If the last method is used the surface must be brushed afterwards with a coat of strong vinegar to destroy any trace of the alkali in the remover. Make sure that every part of the floor is firm

and solid. There should be no spring to it when stepped on. After sandpapering and cleaning, the floor is ready for painting.

PRIMING SOFT WOOD FLOORS.

If the floor is of white pine, poplar or hemlock, all very soft woods, use the following:

FORMULA NO. 27.

100 pounds Dutch Boy white-lead
4 gallons pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes about 9 gallons of paint which will cover about 5,400 square feet, one coat.

In applying use a full brush of paint and brush out well. One cause of stickiness on floors is flowing the paint on so thick that it does not dry thoroly underneath, and then hurrying too much with the other coats.

After the priming is dry, all joints, cracks, nail holes, and other defects should be filled with a good putty.

The putty should be firmly pressed into the joints and smoothed over with a putty knife. When entirely dry, sandpaper carefully to remove any surplus.

PRIMING HARD WOOD FLOORS.

New hard wood floors—oak, maple, ash, yellow pine, walnut (all less absorbent than white pine or hemlock)—are not often painted,

but when it is desired to paint them with white-lead, use less oil and more turpentine. The following formula is a good one:

FORMULA NO. 28.

100 pounds Dutch Boy white-lead
3 gallons pure raw linseed oil
4 gallons pure turpentine
1 pint pure drier

This formula makes about 9 gallons of paint and will cover about 5,175 square feet, one coat.

The priming coat is always the most important. A first-class foundation saves material and labor in repainting.

BODY AND FINISHING COATS.

For the body or second coat, whether on new work or old, regardless of the variety of wood, use the following:

FORMULA NO. 29.

100 pounds Dutch Boy white-lead
1 gallon pure raw linseed oil
2 gallons pure turpentine
1 pint pure drier

This formula makes about 6 gallons of paint and will cover about 3,600 square feet, one coat.

For the finishing or third coat:

FORMULA NO. 30.

100 pounds Dutch Boy white-lead
1 gallon pure raw linseed oil
1½ gallons pure turpentine

½ gallon floor varnish
½ pint pure drier

This formula makes about 5¾ gallons of paint and will cover about 3,450 square feet, one coat.

Two things to keep in mind thruout the work are: first, vigorous brushing to spread out each coat to the utmost; second, allowing each coat at least four days to dry.

PAINTING PORCH FLOORS.

Porch floors require protection against moisture from the damp space beneath the porch. This space is frequently left without sufficient ventilation. If the soil is damp the porch floor cannot help absorbing a great deal of moisture, and that is almost certain to cause blistering and peeling. To prevent trouble of this sort give the underside of the floor, also the tongued and grooved edges of the boards, whether soft or hard wood, a primer mixed as follows:

FORMULA NO. 31.

66 pounds Dutch Boy red-lead or pure dry red-lead
34 pounds Dutch Boy white-lead
5 gallons raw linseed oil
1 gallon turpentine
¼ pint pure drier

This formula makes about 8½ gallons of paint and will cover about 4,885 square feet, one coat.

Such painting should last for ten years or longer.

Make the outside coats the same as for interior floors.

WHAT COLORS TO USE.

The painted floor of a room should be of a color that does not readily show soiling or scratching or dust. The color should be neutral in tone so as to blend easily with rugs and draperies. It must make the room neither brilliant nor sombre. The range of available colors is thus narrowed down to certain shades of red, brown and green. The red should be rather dark and may have a suggestion of pink; the brown may be toned down with gray; the green should be on the dark olive order. All the tones should be soft rather than bright.

Colors suitable for a porch floor are various grays, such as slate, stone or lead colors, and greens or browns. The grays may have a touch of red yellow to counteract their natural coldness. The greens may run from light olive to dark olive or in some cases to bronze green. The browns may range from terra cotta to chocolate brown or even darker.

Personal taste, exposure as to sunlight, and harmony with the adjacent color are factors that should help determine the color chosen.

OTHER FINISHES FOR HARD WOOD FLOORS.

For hard wood floors that are not to be painted, four kinds of treatment may be named — oiling, shellacking, varnishing and waxing. The processes overlap more or less and vary according to the kind of wood. The treatment selected should also depend upon the way the floor is to be used. A few fundamentals may be stated.

Open-grained hard woods, such as oak, birch, ash or walnut, should be treated first with a good silex paste filler; close-grained hard woods, like maple or cherry, require no filler; yellow pine, owing to the pitch it is likely to contain, should first have a thin coat of shellac to prevent the pitch from blistering later coats.

Good silex paste fillers may be purchased ready to apply. Or an excellent one may be made by mixing the finest silex or silica with equal parts of pure linseed oil, pure turpentine and best japan drier, so as to form a medium paste. Reduce this paste to a fairly thin mixture with turpentine only, allowing the result to stand for a time. Brush across the grain of the wood with a stiff, stubby brush that will work the paste well into the pores. One coat makes a fair job, but two coats make a better one, filling up the checks which the first coat did not fill.

After drying for an hour or somewhat less, rub the wood briskly across the grain with coarse burlap or excelsior to remove surplus filler left on the surface.

The chief purpose in using fillers is to prevent the oil from darkening the wood. Mineral oils do this less than pure linseed oil does, but mineral oils should not be used in homes, offices or public halls for the reason that they soil clothing which comes in contact with them.

OIL FINISH.

Oiling, no doubt, is the most durable finish for a floor, tho it requires frequent going over. One effect of oil is to darken considerably the natural color of the wood. For a floor oil

use three parts of pure boiled linseed oil to one part of turpentine. When boiled oil cannot be obtained take four parts raw oil, one part turpentine and one part drier. Stir frequently while using; apply with a strong, stiff brush; rub well into the wood. Clean off all surplus oil not taken up by the wood. An oiled floor should be wiped frequently with an oiled cloth. Oily rags are liable to take fire spontaneously and should be burned.

SHELLAC FINISH.

This treatment gives a fairly lasting finish if the floor is not to have very rough usage. Three or four coats of shellac, thinned down with alcohol, are recommended for either soft or hard wood floors. Sandpaper between coats. Rub down with oil and pumice stone on the last coat if a dull finish is desired.

VARNISHING FLOORS.

When a floor is to be varnished it is poor policy to try to save money on the varnish. A high-grade floor varnish, like kauri varnish, containing 100 pounds of hard resin to 20 gallons of oil, is none too good. Assuming that the wood has been suitably prepared as suggested above, and then sandpapered smooth, two or three coats of varnish should be applied, allowing ample time between coats for drying. If the film is thin it wears away too soon. A white shellac varnish, which dries quickly, is sometimes used. Varnish is the cleanest and most satisfactory finish if properly done, and it looks well as long as it does not get marred.

WAX FINISH.

Soften floor wax, purchased from any paint dealer, with a very little linseed oil and then reduce to a paste by mixing with turpentine. Spread on the floor in a thin coat. Allow to dry and then rub down with a heavy-weighted brush. Several coats should be applied in the same way. To keep such a floor in prime condition requires frequent brushing or rubbing with a soft cloth, and a thin coat of wax about once a month. Waxing gives a beautiful finish, scratches on it are easily repaired and it tends least of all treatments to darken the wood or hide the grain. Waxed floors are smooth and likely to be slippery. Aside from this objection, and the constant care they require, wax is recommended as the handsomest of all finishes.

PAINTING BRICK, STONE, CONCRETE AND STUCCO

Preparing Brick and Stone Surfaces.—If any mortar has become loose and washed out, repoint all such damaged places with mortar or Portland cement before applying any paint. After priming, correct small defects in the surface with putty.

New brick should not be primed until dry. At least two or three days of dry weather should precede painting.

No painting should be attempted in cold weather.

Treat new mortar or cement as specified in the following paragraph:

Preparing Stucco or Concrete.—Stucco or concrete work should be allowed to stand and dry at least a year before paint is applied. If painted within less than a year, it may be aged artificially by washing with twenty parts zinc sulphate to eighty parts water or with ordinary carbonic acid water.

Strictly kettle-boiled linseed oil should be used as specified wherever possible, especially on stucco and concrete. If kettle-boiled oil is not available, the alternative specifications for raw oil and a drier should be used.

Formulas for Brick and Stucco.—For painting brick or stucco, apply three coats of paint mixed according to the following formulas:

FORMULA NO. 32.—PRIMING COAT.

(BRICK AND STUCCO).

100 pounds Dutch Boy white-lead
7 gallons pure boiled linseed oil (or 7 gallons pure raw linseed oil and 1½ pints pure drier)
1 gallon turpentine

This formula makes about 10¾ gallons of paint and will cover about 6,180 square feet, one coat.

FORMULA NO. 33—ALTERNATE PRIMING COAT

(OFTEN PREFERRED FOR BRICK AND STUCCO).

70 pounds Dutch Boy white-lead
30 pounds Dutch Boy red-lead or pure dry red-lead

HANDY TABLE

TABLE D-

BASED ON DRY RED-LEAD FORMULAS W

DRY RED-LEAD FORMULAS		DRY RED-LEAD BASED ON 100 POUND KEG		DUTCH Paste R EQUIVA FORMULA ON 100 P
Pounds of Dry Red-Lead to One Gallon of Linseed Oil	Gallons of Paint Resulting	Gallons of Linseed Oil to 100 Pounds of Dry Red-Lead	Gallons of Paint Resulting	Gallons of Linseed Oil to 100 Pounds of Dutch Boy Paste Red-Lead
40	1.55	2.50	3.87	1.492
35	1.48	2.86	4.23	1.824
33	1.45	3.03	4.40	1.988
32	1.44	3.125	4.49	2.076
31	1.42	3.23	4.60	2.171
30	1.41	3.33	4.70	2.271
29	1.40	3.45	4.82	2.379
28	1.38	3.57	4.94	2.494
27	1.37	3.70	5.07	2.617
26	1.36	3.85	5.22	2.750
25	1.34	4.00	5.37	2.894
24	1.33	4.17	5.54	3.050
23	1.32	4.35	5.72	3.219
22	1.30	4.55	5.92	3.404
21	1.29	4.76	6.13	3.606
20	1.27	5.00	6.37	3.829

Weight of one gallon of Dry Red-Lead, 73 pounds. W

RED-LEAD DATA
S. MEASURES)
DUTCH BOY PASTE RED-LEAD EQUIVALENTS

Y ad NT SED KEG	FOR A GALLON OF PAINT MADE WITH PASTE RED-LEAD USE		COMPOSITION OF PAINT MADE FROM EITHER DRY RED-LEAD OR DUTCH BOY PASTE RED-LEAD			
Resulting	Pounds of Paste Red-Lead	Fraction of a Gallon of Linseed Oil	Pounds Dry Red-Lead in Each Gallon	Weight of Each Gallon (POUNDS)	Quantity of Linseed Oil in Each Gallon (GALLONS)	Approximate Quantity of Linseed Oil in Each Gallon (PINTS)
616	27.7	0.41	25.8	30.8	0.65	5¼
948	25.3	.46	23.6	28.9	.68	5½
812	24.3	.48	22.7	28.1	.70	5½
200	23.8	.49	22.2	27.6	.70	5½
195	23.3	.50	21.2	27.2	.70	5½
395	22.8	.52	21.3	26.8	.71	5¾
503	22.2	.53	20.8	26.3	.71	5¾
618	21.7	.54	20.3	25.9	.72	5¾
741	21.1	.55	19.7	25.4	.73	6
874	20.5	.56	19.2	24.9	.74	6
018	19.9	.58	18.6	24.3	.74	6
174	19.3	.59	18.1	23.9	.75	6
343	18.7	.60	17.5	23.4	.76	6
528	18.1	.62	16.9	22.9	.77	6¼
730	17.5	.63	16.3	22.3	.78	6¼
953	16.8	.64	15.7	21.8	.79	6¼

t of one gallon of Dutch Boy Paste Red-Lead, 47 pounds.

5 gallons pure boiled linseed oil (or 5 gallons pure raw linseed oil and 1 pint pure drier)
½ gallon pure turpentine

This formula makes about 8½ gallons of paint and will cover about 4,885 square feet, one coat.

FORMULA NO. 34.—SECOND COAT.
(BRICK AND STUCCO).

100 pounds Dutch Boy white-lead
4 gallons pure linseed oil (⅓ boiled, ⅔ raw)
(or 4 gallons pure raw linseed oil and 1 pint pure drier)
1 gallon pure turpentine.

This formula makes about 7 gallons of paint and will cover about 4,200 square feet, one coat.

FORMULA NO. 35.—THIRD COAT.
(BRICK AND STUCCO).

100 pounds Dutch Boy white-lead
3½ gallons pure linseed oil (⅓ boiled, ⅔ raw)
(or 3½ gallons pure raw linseed oil and 1 pint pure drier)
1 pint pure turpentine

This formula makes about 6½ gallons of paint and will cover about 3,900 square feet, one coat.

Formulas for Concrete and Stone.—Concrete and stone are not as porous as brick and stucco and should therefore be treated differently. Apply three coats of paint mixed according to the following formulas:

FORMULA NO. 36—PRIMING COAT.

(CONCRETE AND STONE).

100 pounds Dutch Boy white-lead
5 gallons pure boiled linseed oil (or 5 gallons pure raw linseed oil and 1 pint pure drier)
1 gallon pure turpentine.

This formula makes about 8¾ gallons of paint and will cover about 5,030 square feet, one coat.

FORMULA NO. 37—ALTERNATE PRIMING COAT.

(OFTEN PREFERRED FOR CONCRETE AND STONE).

70 pounds Dutch Boy white-lead
30 pounds Dutch Boy red-lead or pure dry red-lead
4 gallons pure boiled linseed oil (or 4 gallons pure raw linseed oil and 1 pint pure drier)
½ gallon pure turpentine

This formula makes about 7 gallons of paint and will cover about 4,025 square feet, one coat.

FORMULA NO. 38—SECOND COAT.

(CONCRETE AND STONE).

100 pounds Dutch Boy white-lead
3 gallons pure linseed oil (⅓ boiled, ⅔ raw)
(or 3 gallons pure raw linseed oil and 1 pint pure drier)
½ gallon pure turpentine

This formula makes about 6½ gallons of paint and will cover about 3,900 square feet, one coat.

FORMULA NO. 39—THIRD COAT.
(CONCRETE AND STONE).

100 pounds Dutch Boy white-lead
3½ gallons pure linseed oil (⅓ boiled, ⅔ raw)
(or 3½ gallons pure raw linseed oil and 1 pint pure drier)
1 pint pure turpentine

This formula makes about 6½ gallons of paint and will cover about 3,900 square feet, one coat.

FLAT AND SEMI-FLAT FINISHES.

Excellent flat and semi-flat finishes on brick, stone, concrete and stucco can be secured by applying over the second coat one or two coats of paint made with Dutch Boy white-lead and Dutch Boy flatting oil. For flat Milwaukee finish, the proportions should be 2 to 3 gallons of flatting oil to 100 pounds of white-lead. For egg-shell gloss finish, use 1½ to 2 gallons of flatting oil and ¾ gallons of spar varnish to 100 pounds of white-lead. For brick-red finish on outside brick, thin the color with Dutch Boy flatting oil.

PAINTING CONCRETE FLOORS.

The foregoing priming coat for "Concrete and Stone"—formula No. 36—can be used in painting concrete floors, but the second and third coats must be made to produce a harder finish than is necessary in the case of concrete and stone walls. Floors, obviously, are subjected to a much more severe usage than walls. Formula No. 29 and Formula No. 30

(page 55) should be used as the second and third coats, respectively, in painting concrete floors. They will produce the hard finish needed.

After the priming coat is dry all cracks and other defects in the floor should be filled with a good putty. The putty should be firmly pressed into the cracks and smoothed over with a putty knife.

Two things to keep in mind thruout the work are: first, vigorous brushing to spread out each coat to the utmost; second, allowing each coat at least four days to dry. One cause of stickiness on floors is flowing the paint on so thick that it does not dry thoroly underneath, and then hurrying too much with the other coats.

The third coat (Formula No. 30) should be tinted with a little lampblack to match the natural color of concrete.

PAINTING METAL

The chief requirements of a protective coating for metal are that it have the ability to stick firmly to metal and that it keep moisture, which combined with air forms rust, from getting thru. The paint must also be able to resist the destructive action of atmospheric gases, acids from the surface soil, and salt spray near the seacoast.

Paint made of pure red-lead meets all these requirements. It is insoluble in water, unaffected by ordinary atmospheric gases, adheres closely to metal, and is a true rust preventive. Pure red-lead has excelled every other material in all kinds of tests, ancient and recent, both in the laboratory and in the field. Nearly all the railroads of the country use it

for the protection of bridges and building skeletons. It is used on every vessel in the United States Navy, on gas holders and oil tanks, farming implements and machinery, tin roofs, pipes, water tanks and troughs; in fact, wherever metal needs protection against corrosion, there red-lead is used.

RED-LEAD IN PASTE FORM.

A great advance in the quality of red-lead was made a few years ago when Dutch Boy red-lead was perfected. It is a more highly oxidized product than old-style dry red-lead and is sold in paste form, ready to use after the addition of more linseed oil. Being more highly oxidized, Dutch Boy red-lead is finer and covers better. Being in paste form, it is easier and more economical to handle.

Dutch Boy red-lead is sold in 12½, 25, 50 and 100 pound steel kegs at all leading paint stores.

AREA RED-LEAD PAINT WILL COVER.

In estimating the quantity of red-lead paint needed for a job, the spreading rate to allow is 600 square feet to the gallon, one coat, altho paint made of Dutch Boy red-lead may be expected to do considerably better than this area. This figure, of course, is approximate at best, as the covering capacity of any paint varies somewhat according to consistency, how much "elbow grease" is put behind the brush and the condition of the surface being painted. For example, badly pitted and rough metal will take more paint than a perfectly smooth and clean surface. The variation in

any case, however, will probably not be enough to throw the calculations far off.

PREPARING THE SURFACE.

To obtain the best results with red-lead, care should be exercised in applying as well as mixing the paint. A vital point is to clean off all rust, dirt and foreign material before commencing to paint. This cleaning can be done very satisfactorily with scrapers and a wire brush. Rust, the great enemy of iron and steel, is an accelerator of rusting, and if allowed to remain will work disaster even after the paint has been applied. Besides, rust and dirt are apt to cause peeling of the paint.

Have the surface as smooth as possible. It has been observed that highly polished steel plates corrode slowly, except at scratches, where they rust rapidly.

NUMBER OF COATS.

Three coats of paint are necessary on all outside work if best results are to be obtained. Two coats will do for metal that is indoors. In no case will one coat of paint completely cover bare metal. To the naked eye, the metal may appear to be covered but under the microscope there is another story. Many small pinholes and air bubbles will be found. Ever a second coat will not absolutely cover all these pinholes. A third coat is really necessary. Of course, the more the paint is brushed out, the more the pinholes and air bubbles are worked out. Plenty of good brushing effort is essential to a first-class job.

MIXING THE PAINT.

Paint is made with Dutch Boy red-lead exactly as white-lead paint is made with white-lead paste, by simply adding linseed oil a little at a time and stirring constantly with a wooden paddle. The same procedure is followed if dry red-lead, instead of paste red-lead, is used.

If the paint is to be tinted, "break up" or soften the red-lead first with just enough linseed oil to make a workable paste; then add the coloring material and finally the remainder of the oil. If drier is to be used, put it in after the coloring material and before adding the final oil. (See white-lead mixing directions on page 10 which are similar.)

APPLYING THE PAINT.

Steel and iron should never be painted during wet weather nor when covered with dew or frost. Early morning painting during the late summer months is not recommended as a usual thing. It is always better to wait until the sun has had time to dry everything out. It is bad practice to attempt painting in freezing weather.

Paint mixed from red-lead can best be applied with a pound or round brush. Be sure to use plenty of paint, covering the surface well and not attempting to make a gallon of paint go too far. Pay particular attention to bolts, rivet heads, edges and corners, as they are more subject to destructive influences than perfectly flat surfaces.

The priming coat is the most important. Extra care and precaution should be taken during its application.

Allow plenty of time between coats for the previous coat to dry thoroly. A week is not too long, especially for the priming coat.

FORMULA NO. 40—PRIMING COAT.

(EXTERIOR AND INTERIOR).

100 pounds Dutch Boy red-lead
2½ gallons linseed oil (*see note* page 72)

—or—

100 pounds pure dry red-lead
3⅝ gallons linseed oil (*see note* page 72)

The first formula makes about 4½ gallons of paint and the latter about 5 gallons of paint, which will cover respectively about 2,700 and 3,000 square feet, one coat.

FORMULA NO. 41—SECOND COAT (SLIGHTLY SHADED).

(EXTERIOR AND INTERIOR).

100 pounds Dutch Boy red-lead
2⅝ gallons linseed oil (*see note* page 72)
12 ounces lampblack ground in oil

—or—

100 pounds pure dry red-lead
3¾ gallons linseed oil (*see note* page 72)
13 ounces lampblack ground in oil

The first formula makes about 4¾ gallons of paint and the latter about 5¼ gallons of paint, which will cover respectively about 2,850 and 3,150 square feet, one coat.

The lampblack is added to the red-lead for the second coat to change the color of the paint to a light brown, which enables the painter to see readily if any places are not covered properly. Moreover, a slightly shaded second coat facilitates the inspection of the final coat in the same way.

FORMULA NO. 42—THIRD COAT (DARK BROWN).

(EXTERIOR).

100 pounds Dutch Boy red-lead
2⅝ gallons linseed oil (*see note below*)
10 pounds pure lampblack ground in oil

—or—

100 pounds pure dry red-lead
3¾ gallons linseed oil (*see note below*)
10¾ pounds pure lampblack ground in oil

The first formula makes about 5¾ gallons of paint and the latter about 6 gallons of paint, which will cover respectively about 3,450 and 3,600 square feet, one coat.

NOTE: (*a*) If genuine boiled linseed oil is available such as our own Dutch Boy boiled oil, we advise the use of one-third boiled oil and two-thirds raw oil. If raw oil only is used add one-half pint drier to every gallon of paint. (*b*) One-half pint of turpentine may be added to each two gallons of paint whenever it is deemed advisable to make the paint produced by any formula work more easily.

DARK FINISHES.

Where a dark color is desired other than the browns secured by shading red-lead with lampblack, decorative finishes, such as greens and black, are obtainable by simply adding tinting matter to Dutch Boy red-lead.

Formulas for tinting Dutch Boy red-lead light and dark green and black follow:

FORMULA NO 43—LIGHT GREEN.

100 pounds Dutch Boy red-lead
6⅛ gallons linseed oil (*see note above*)
31 pounds paste chrome yellow medium
13 pounds paste Chinese blue

The preceding formula makes about 10¼ gallons of paint, which will cover about 6,150 square feet, one coat.

FORMULA NO. 44—DARK GREEN.

100 pounds Dutch Boy red-lead
4½ gallons linseed oil (*see note* page 72)
12½ pounds paste chrome yellow medium
7½ pounds paste Chinese blue

This formula makes about 7¾ gallons of paint, which will cover about 4,650 square feet, one coat.

FORMULA NO. 45—BLACK.

100 pounds Dutch Boy red-lead
15¼ gallons linseed oil (*see note* page 72)
52 pounds lampblack-in-oil
16 pounds paste Chinese blue

This formula makes about 24½ gallons of paint, which will cover about 14,700 square feet, one coat.

Intermediate shades of green and brown can be secured by varying the amount of coloring matter used. Where the formulas given are altered to any great extent, however, be sure that the amount of linseed oil used is increased or decreased accordingly.

LIGHT FINISHES.

In cases where decorative finishes are desired other than the dark ones obtainable by tinting Dutch Boy red-lead, use pure white-lead and linseed oil, tinted, for the last two coats on exterior work and for the last coat on interior work. White-lead and linseed oil are especially adapted for use over red-lead and linseed oil because linseed oil dries much the

same with these two pigments and therefore the two paints make a homogeneous film, as regards the dried-oil component.

The following white-lead second and final coats will be found to give good results generally over a priming coat of red-lead:

FORMULA NO. 46—SECOND COAT.
(EXTERIOR).

100 pounds Dutch Boy white-lead
1½ gallons pure raw linseed oil
1½ gallons pure turpentine
1 pint pure drier

This formula makes about 6 gallons of paint, which will cover about 3,600 square feet, one coat.

FORMULA NO 47—FINAL COAT.
(EXTERIOR AND INTERIOR).

100 pounds Dutch Boy white-lead
3½ to 4½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes from 6½ to 7½ gallons of paint, which will cover from 3,900 to 4,500 square feet, one coat.

It can be adapted to any tint desired by putting in the proper tinting material and adding linseed oil and turpentine equal to one-half the weight of the tinting material.

Where white or an exceptionally light tint is desired, two coats of white-lead paint should also be used on interior work in order to obscure totally the red-lead undercoat. In such cases, apply the second as well as the

final coat given above, adding about one ounce of lampblack to the second coat to throw it off the pure white. The practice of adding lampblack should be followed also for the second coat on exterior work if the finishing coat is to be white or extremely light.

A GOOD GRAY OVER RED-LEAD.

A very attractive light gray, which will in one coat hide the red-lead undercoatings, can be obtained by mixing white-lead, lampblack and French ochre according to the following formula:

FORMULA NO. 48—LIGHT GRAY.
(EXTERIOR AND INTERIOR).

100 pounds Dutch Boy white-lead
4 ounces paste lampblack
8 ounces paste French ochre
4 gallons pure linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes about 6¾ gallons of paint, which will cover about 4,050 square feet, one coat.

PAINTING METAL CEILINGS.

While red-lead is, without question, the best priming coat for metal work of any kind, its color may be objectionable for use on metal ceilings which are to be finished in white or a very light tint. In such a case, a white-lead priming coat, mixed according to formula No. 46 (page 74) will be satisfactory. The second coat should be mixed according to formula

No. 12 (page 29). If a flat finish is desired, the third or final coat should be made according to formula No. 13 (page 29). If an egg-shell finish is preferred formula No. 14 (page 30) should be used for the final coat.

PAINTING GALVANIZED IRON

No paint can be recommended honestly to stand up satisfactorily on galvanized iron at all times because the coating left by the galvanizing process has a tendency to repel paint. Sometimes the paint takes hold properly right away; other times considerable difficulty is encountered in making the paint adhere.

It has been the experience of practical painters that paint made of pure red-lead and linseed oil gives good results most consistently. The best results are obtained after the galvanized iron has been exposed to the weather at least six months.

Apply three coats of paint mixed according to the following formulas:

FORMULA NO. 49—PRIMING COAT
(GALVANIZED IRON).

100 pounds Dutch Boy red-lead
3 gallons pure linseed oil (*see note* page 72)
1 pint pure turpentine

This formula makes about 5¼ gallons of paint, which will cover about 3,150 square feet, one coat.

Do not merely spread the priming coat onto the metal and expect it and succeeding coats to stick at all hazards. Brush the paint out well and use enough pressure to force it into

every microscopic irregularity in the surface. Many an otherwise good job of painting on galvanized iron has gone wrong simply because the paint was not brushed on "close," as the painters say.

FORMULA NO. 50—SECOND COAT.

(GALVANIZED IRON).

100 pounds Dutch Boy red-lead
2½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier
2 to 4 ounces lampblack-in-oil

This formula makes about 5 gallons of paint, which will cover about 3,000 square feet, one coat.

THIRD COAT.

(GALVANIZED IRON).

Mix the third coat similar to the second coat, except where a decorative finish is desired other than the slightly shaded red-lead color. In the latter case, substitute one of the tinted red-lead finishing coats on pages 71, 72, 73, or use instead white-lead paint, tinted, mixed and applied in accordance with directions on pages 73 and 74.

PAINTING SILO EXTERIORS

Painting silo exteriors is not unlike any other outside painting. The paint must protect the material of which silos are constructed. It must also keep their walls airtight and moistureproof and it should be decorative.

For the outside of wood and concrete silos,

a better protective and decorative paint cannot be had than that mixed to order from Dutch Boy white-lead, pure linseed oil, turpentine and drier. If the silo is constructed of wood follow the directions and formulas for painting outside wood which are given at the front of this book. If the silo is a masonry one, proceed according to the instructions on page 60, covering the painting of brick, stone, concrete and stucco.

For the outside of all-metal silos, as well as the metal parts of those built of wood or masonry (for example, the iron and steel reinforcing bands on stave silos), there is no more economical and efficient paint than Dutch Boy red-lead brought to painting consistency by the addition of more linseed oil. Prepare the surface, mix the paint and apply as directed in the preceding section of this book devoted to the painting of metal.

In all cases, all three coats (priming, second or body, and third or finishing) should be applied if the exterior has never been painted before to insure the most satisfactory results. Two coats are sufficient for repainting, providing the old paint is firm and unbroken.

DECORATIVE FINISHING COATS.

Do not overlook the fact that Dutch Boy red-lead as well as Dutch Boy white-lead places every desirable decorative finish at your disposal. Red-lead, untinted, has a pleasing orange color and only the addition of coloring matter is necessary to produce numerous handsome shades of brown, green and red. Should light colors be wanted, it is simply

necessary to omit the last two red-lead coats and finish with white-lead paint, suitably tinted. No matter, therefore, of what material a silo is built, it can be decorated in tasteful colors and brought into perfect harmony with the house and other buildings.

RED-LEAD FOR PRIMING WOOD

Dutch Boy red-lead makes a splendid primer for all kinds of lumber. It is recommended particularly for hard, pitchy and sappy wood, like yellow pine and spruce.

Making paint adhere properly to wood of this nature is oftentimes a difficult task and unless a firm, hard foundation is laid, the resinous matter in the wood will soften and work its way to the surface, causing the outer coats to crack and scale.

Not only does Dutch Boy red-lead insure the solid foundation necessary, but it acts on the resinous matter in the nature of a drier, keeping it hard and confined.

Where there is no objection to the brilliant natural color of red-lead, the following straight red-lead formulas will be found to give satisfactory results:

FORMULA NO. 51—PRIMING HARD WOOD, LIKE YELLOW PINE.

100 pounds Dutch Boy red-lead
1¾ gallons *raw* linseed oil
1¾ gallons turpentine
1 pint pure drier

This formula makes about 6 gallons of paint and will cover about 3,600 square feet, one coat.

FORMULA NO. 52—PRIMING SOFT WOOD, LIKE WHITE PINE, HEMLOCK, POPLAR, ETC.

100 pounds Dutch Boy red-lead
4 gallons *raw* linseed oil
2 gallons turpentine
1 pint pure drier

This formula makes about 8 gallons of paint, and will cover about 4,800 square feet, one coat.

On jobs where it is desired to finish with a light paint over red-lead, formulas consisting of three parts white-lead and two parts red-lead are recommended. Use:

FORMULA NO. 53—PRIMING HARD WOOD, LIKE YELLOW PINE.

40 pounds Dutch Boy red-lead
60 pounds Dutch Boy white-lead
1¾ gallons *raw* linseed oil
1¾ gallons turpentine
1 pint pure drier

This formula makes about 6⅛ gallons of paint, and will cover about 4,500 square feet, one coat.

FORMULA NO. 54—PRIMING SOFT WOOD, LIKE WHITE PINE, HEMLOCK, POPLAR, ETC.

40 pounds Dutch Boy red-lead
60 pounds Dutch Boy white-lead
4 gallons *raw* linseed oil
2 gallons turpentine
1 pint pure drier

This formula makes about 8½ gallons of paint and will cover about 5,100 square feet, one coat.

The predominance of the white pigment in formulas Nos. 53 and 54 results in a light orange-red paint which may be easily obscured

by subsequent white-lead coats and the percentage of red-lead is quite sufficient to produce the hard-foundation required.

PAINTING AUTOMOBILES, CARRIAGES AND WAGONS.

The best way to paint automobiles, carriages and wagons, and the oldest, too, is by the "lead-in-oil" method. By this process a film is secured that is tough enough to stand the abrasive force of sand and dirt and elastic enough to stand the jars and jounces to which a vehicle in service is constantly subjected.

Before explaining the lead-and-oil process let us issue two short cautions: *First*—Purchase only materials bearing the name of a manufacturer known to be reliable. *Second*—Do all your painting and varnishing in a room that is clean and free from dust and maintain thruout an even temperature of about 60 to 80 degrees Fahrenheit.

If the old paint is loose and flaky there is no recourse other than to scrape or burn it off and build up anew from the metal or wood. The body and running parts of a vehicle are painted differently and we will treat them separately in the order named. (See page 85 for touching-up job.)

BODY.

In vehicle painting, as in all other kinds of general painting, the priming coat is of great importance, for a faulty priming may result in the ruination of the entire job. Ring checks,

fissures and decayed finish are often directly traceable to neglect at this early stage.

Priming Automobile Bodies.—For the priming coat on automobiles or the steel body of any other vehicle, paint made of pure red-lead is recommended. Mix the paint on the basis of one hundred pounds Dutch Boy red-lead, three gallons pure linseed oil and one gallon pure turpentine. If boiled linseed oil is obtainable, use one-third boiled oil and two-thirds raw oil. If raw oil only is used, add one-half pint drier to every gallon of paint.

Brush the paint out well so as to leave a comparatively thin coat.

Priming Bodies of Wood.—For priming the bodies of carriages and wagons use strictly pure white-lead, etc., stained with a little lampblack, and thinned with a mixture of two parts raw linseed oil and one part turpentine on the basis of fourteen pounds of lead to one gallon of oil. Apply with a good brush, brushing the paint well into the pores.

Lead Foundation.—In the case of automobiles as well as carriages and wagons let the priming coat dry two or three days and then sandpaper down with No. ½ sandpaper. The dust from sandpapering is more or less poisonous and should not be breathed. It is practicable to wet the sandpaper in good, heavy, mineral turpentine (*not benzine*), flash point 100° or over. Dust off well, removing every loose particle of paint, and follow with a coat of white-lead stained with a small amount of lampblack, a little finishing varnish and some gold size japan. This should make a fairly thick paste. Thin down with turpentine and apply one good coat with a clean, white bristle, chisel-edged brush of good quality. Allow plenty of time to dry thoroly.

The next coat is known as "knifing lead" and is made either with (*a*) dry white-lead two-thirds, keg lead one-third, mixed with rubbing varnish and japan, equal parts; or (*b*) dry white-lead mixed with rubbing varnish and japan, equal parts. Apply either paste smoothly and evenly all over, using a putty knife with a blade about 2¾ inches wide.

Allow sufficient time to dry and then putty up all rough spots and flush all nail holes with a stiff putty made of equal parts of dry white-lead wet with quick rubbing varnish and coach japan.

For the next coat, the final lead foundation, prepare some keg lead, stained with a small quantity of lampblack, a little quick rubbing varnish and the same amount of coach japan. Thin the resulting paste with turpentine and put on one coat.

Roughstuff.—Next comes what is known to the trade as "roughstuff." There are numerous formulas for roughstuff, but the following good old-fashioned formula still seems to be best. Knead three parts of good American filler to a thick paste with one part of keg lead stained with a little lampblack, and equal parts of quick rubbing varnish and coach japan. Thin with turpentine. With a good bristle brush lay on three coats alternately in transverse directions, allowing enough time between coats for the previous coat to dry. Two coats per day can be safely applied.

Guide Coat.—After the final coat of roughstuff comes the guide coat, made of yellow ochre wet to a paste with one part rubbing varnish and one part coach japan. Thin down with a little turpentine; just enough to make a spreadable paint. Apply a heavy coat over

the roughstuff and leave two days to dry. Time allowed for this purpose is well spent.

In the meantime get ready for rubbing or cutting down the guide coat to a slick, glass-like surface. Some block pumice stone, a couple of buckets of water, chamois and sponges will be needed. Break or saw the pumice stone into various sizes and shapes and use the lightest and most open pieces first because they cut more rapidly than the denser ones. Wet the pumice with water and rub until the guide coat disappears. Don't forget the inside of the job. Wash off clean with a sponge and dry with a piece of chamois. Let the job stand two hours and then proceed with the next step —the color coat.

The Color and Varnish Coat.—Confine the color combination to two colors, one for the body and another for the gear, with the addition perhaps of another color, for striping. Neat quiet effects, like black and red, are always in good taste and desirable.

The necessary coach colors may be obtained in air-tight tins, ground in "grinding-japan," instead of oil, and loaded nearly to the point of saturation with lead and manganese. Add enough finishing varnish to form a paste and thin down with turpentine. Apply one coat with a camel's-hair brush. The job is now ready to stripe.

Striping.—Rub down the work all over with fine, white curled hair before striping. Do not attempt any elaborate designs. Simply run on a few lines of some harmonizing color which will serve to intensify the beauty and brilliancy of the main color field.

Finishing Coats.—As soon as the stripes are dry, go over the job lightly with a wet sponge and wipe off with a damp chamois. After

washing up flow on two coats of the best finishing varnish and the job is finished. This varnish gives a brilliant, hard, elastic, durable finish—a sort of Sunday suit for all that has gone before.

RUNNING GEAR.

The steps taken in painting the body are followed in painting the running parts of a vehicle except that the three roughstuff coats are omitted entirely and one coat of body varnish is sufficient.

TOUCHING-UP JOB.

In cases where the old paint film is intact and where only the varnish has fissured or perished a quicker method than the foregoing may be used. For a cheap or touching-up job proceed as follows: Clean parts thoroly, removing all traces of grease, dirt and grit with scrapers and wire brushes. Give the body and gear a light rubbing with powdered pumice and water, touching up the bare spots with a coat of lead color. Follow with one coat of flat color, one coat of color and varnish, and one coat of finishing varnish.

If the paint on the vehicle you desire to paint is still firm, but cracked in places, go over the surface with glazing putty before applying the float coat.

PAINTING BOATS

The practice in painting boats is regulated largely by one thing—*the type of craft.*

If a boat is a yacht or a launch, the owner

aims to keep it always clean and bright. Its appearance is a matter of pride with him. Hence the handsomest job obtainable is none too fine, and coat upon coat of paint is often applied in order to get an unusually nice finish.

A rowboat, on the other hand, is not a show boat. While the possessor of one or a fleet of them wants a job that looks well, only an ordinarily good finish is called for.

When it comes to canoes an altogether different problem is presented. A high-class finish is wanted, but it is not obtained in the same way, because a canoe is usually built of canvas.

For present purposes, therefore, boats have been classified into three groups: Power and Sail Boats; Row Boats; Canvas Canoes. In this order, directions for painting them are taken up.

POWER AND SAIL BOATS.

Parts to Paint.—The outside of the hull, deck-house, and some parts of the interior are proper subjects for the paint brush. Some of these parts should receive attention at least every year.

Preparing the Surface. If the wood is new, dust it off carefully and cover all knots and sappy streaks with orange shellac. The shellac can be made by thinning dry orange gum shellac with pure grain alcohol, proportioned on the basis of four pounds of shellac to one gallon of alcohol. Brush the shellac on thin. If it is put on too thick the paint will alligator, leaving the knots bare.

Painting the Hull.—Prime the new wood with a thin coat of paint mixed as follows:

FORMULA NO. 55—PRIMING COAT.

100 pounds Dutch Boy white-lead
4 gallons pure raw linseed oil
2 gallons Dutch Boy flatting oil or pure turpentine
1 pint pure drier

This formula makes about 9 gallons of paint which will cover about 5,175 square feet, one coat.

Where less paint is required than the quantity which the foregoing formula and those following make, divide the number of gallons given by the number of gallons wanted; then divide the quantities of ingredients by the result. For example: When only 4½ gallons of paint, mixed according to the preceding formula, are needed, divide 9 by 4½ and the resultant 2 into the quantities of ingredients. This changes the formula to fifty pounds of white-lead, two gallons of linseed oil, one gallon of turpentine and one-half pint of drier.

If more paint than a formula makes is required, divide the number of gallons needed by the number given; then multiply the quantities of ingredients by the result.

Mix all paint from the ingredients specified at the time of painting, not only because the composition of prepared paints is uncertain, but also because pigment and oil should not be allowed to stand long after being mixed together.

After the priming coat has dried thoroly, fill all cracks, nail-holes, dents and other defects in the surface carefully with putty. The hardest and most serviceable putty is that based on white-lead. It should consist of equal parts of Dutch Boy white-lead and whit-

ing, mixed to the proper consistency with linseed oil.

Use sandpaper to take the gloss off the shellacked knots and to smooth down the rough places. Then apply a second coat of paint, mixed as follows:

FORMULA NO. 56—BODY COAT.

100 pounds Dutch Boy white-lead
1¼ gallons pure raw linseed oil
1¼ gallons Dutch Boy flatting oil or pure turpentine
1 pint pure drier

This formula makes about 5½ gallons of paint which will cover about 3,000 square feet, one coat.

Repeat the second coat as many times as desired. Many boatmen put on five or six coats very thin. Without question this is the best practice, as a number of thin coats produce much better results than the same thickness of film produced by putting on two or three thick coats.

Finish with a coat of paint mixed as follows:

FORMULA NO. 57—FINISHING COAT.

100 pounds Dutch Boy white-lead
½ gallon spar varnish
2 gallons Dutch Boy flatting oil or pure turpentine

This formula makes about 5½ gallons of paint which will cover about 3,300 square feet, one coat.

The preceding formulas give a "flat" or dull finish, which wears much better under expo-

sure to the water than a glossy paint rich in oil.

Painting the Deck, Spars and Outside of the Cabin.—Use the same formulas for the priming and body coats on the deck, spars and outside of the cabin as for painting the hull. Then apply the following finishing coat. Be sure to allow plenty of time between coats for the preceding coat to become dry.

FORMULA NO. 58—FINISHING COAT.

100 pounds Dutch Boy white-lead
3½ gallons pure raw linseed oil
1 pint pure turpentine
1 pint pure drier

This formula makes about 6½ gallons of paint which will cover about 3,900 square feet, one coat.

Painting the Interior.—New woodwork inside of cabins, saloons, etc., should first receive a thin coat of orange shellac, which will prevent the sap from discoloring the paint. Sandpaper the shellac when dry. Putty all nail-holes and joints. Then apply a priming coat mixed as follows:

FORMULA NO. 59—PRIMING COAT.

100 pounds Dutch Boy white-lead
2 gallons Dutch Boy flatting oil or pure turpentine
½ gallon pure raw linseed oil
1½ pints pure drier

The preceding formula makes about 5½ gallons of paint which will cover about 3,150 square feet, one coat.

Follow with a body coat, mixed as follows:

FORMULA NO. 60—BODY COAT.

100 pounds Dutch Boy white-lead
2½ gallons Dutch Boy flatting oil or pure turpentine
1 pint light enamel varnish
1 pint pure drier

This formula makes about 5½ gallons of paint which will cover about 3,300 square feet, one coat.

Repeat this body coat until all dark places in the wood are obscured. The finish will be "flat" or dull.

If an egg-shell gloss is desired, apply a finishing coat mixed as follows:

FORMULA NO. 61—FINISHING COAT. EGG-SHELL GLOSS.

100 pounds Dutch Boy white-lead
2½ gallons Dutch Boy flatting oil or pure turpentine
½ gallon light enamel varnish
½ pint pure drier

This formula makes about 6 gallons of paint which will cover about 3,600 square feet, one coat.

If a gloss finish is desired, the finishing coat should consist of three pounds of Dutch Boy white-lead, made into a thick paste with turpentine, and thinned with one gallon of light enamel varnish. Mix well and apply the same as any other paint.

Tints.—The finishing coats specified for the hull, the deck, the spars and the outside and inside of the cabin make white paint. Where a colored paint is desired, tint the final coat in each case as directed on pages 17 and 50.

Painting Metal Parts.—Iron and steel hulls, masts or other metal parts of a vessel should

be painted with two coats of Dutch Boy red-lead, thinned according to the following formula:

FORMULA NO. 62.

100 pounds Dutch Boy red-lead
2½ gallons linseed oil (*see note* below)

This formula makes about 4½ gallons of paint which will cover about 2,700 square feet, one coat.

NOTE 1.—If genuine boiled linseed oil is available, such as Dutch Boy boiled oil, we advise the use of one-third boiled oil to two-thirds raw oil. If raw oil is used, add one-half pint japan drier to every gallon of paint. On ornamental parts, finish with white-lead tinted to suit. (Refer to page 73, paragraph headed "Light Finishes.") Below the water-line, finish with anti-fouling paint, if desired.

Repainting.—In repainting, use the same formulas given for painting new work, except that the priming or first coat can be omitted. Old coats should be well smoothed down and the surface should be perfectly dry before new coats are applied.

ROW BOATS.

Do not attempt to paint immediately after taking the boat from the water. Let it dry out thoroly, for no matter how good a paint is it will not stick to a wet or damp surface.

Neither will paint adhere properly to a boat's bottom that is covered with dirt, water plants, marine animals and other foreign matter. Clean off all such accumulations by scraping or scrubbing.

Stop up all leaks before applying any paint.

Cracks and seams can be filled up with caulking cotton soaked in thick white-lead, nail-holes with bits of pine, and very small leaks with white-lead paste.

Paint applied over an uneven surface is bound to present a bad appearance. Where the old paint is rough, sandpaper it down smooth and touch up all bare spots before applying the first coat.

After heeding the foregoing directions, apply two coats of paint, inside and outside, mixed according to the following formula:

FORMULA NO. 63.

25 pounds Dutch Boy white-lead
½ gallon Dutch Boy flatting oil or pure turpentine
½ pint spar varnish

This formula makes about 1¼ gallons of paint which will cover about 750 square feet, one coat.

If a colored paint is wanted, tint the last coat. The addition of a very little lampblack or drop-black will produce a gray. A little Chinese blue will make a light blue. (For other colors follow tinting directions on page 17, using only one-quarter of the quantity of ingredients called for, as formula No. 63 is based on 25 pounds of white-lead instead of 100 pounds.)

The finish produced by two coats of paint mixed according to formula No. 63 will be "flat" or dull. If a gloss finish is desired, use for the last coat three pounds of white-lead made into a thick paste with turpentine and thinned to spreading consistency with one gallon of pale spar varnish.

CANVAS CANOES.

When the paint is so badly cracked and broken that the canvas shows thru in places, it is best to remove the old coat entirely by means of a paint remover and start anew. After the old paint is off, sandpaper the surface and apply a coat of paint composed of:

FORMULA NO. 64.

4 pounds Dutch Boy white-lead
1 pint turpentine
⅓ pint spar varnish
⅙ gill pure drier

Tint as desired.

The above formula makes enough paint for the first coat on one canoe. Put the paint on thick and work it well into the canvas by careful brushing. When dry, sandpaper the surface and then apply two coats of japan color thinned with spar varnish and just enough turpentine to make the paint brush out smooth. One pint of japan color and one pint of varnish are sufficient to do the work.

If the old paint on a canoe is in good condition, the white-lead paint need not be applied. Simply sandpaper the old coat down smooth and apply the two coats of japan color and varnish.

To refinish the inside of a canoe, sandpaper the old varnish thoroly and put on one coat of good spar varnish. One pint of varnish is sufficient to go around.

Patching.—To mend a hole in a canoe, insert a piece of canvas beneath the torn part, pasting the patch on with a little white-lead,

and clinching it to the ribs of the canoe with brass or copper tacks. Very small holes can be fixed by plugging them with white-lead.

SIMPLIFIED MIXING DIRECTIONS.

There are many jobs of painting for which only a comparatively small amount of paint is needed. For jobs of this kind, mix your paint according to the following simplified directions:

GLOSS PAINT.

Paint which gives a gloss finish is used for practically all exterior painting. To make gloss paint, the white-lead is mixed with pure linseed oil, turpentine and drier. For average purposes, the white-lead and liquid portions of the paint should be about equal in bulk, the liquid portion, if any difference, being slightly in excess.

The simplest way to mix the paint is as follows: 1. Measure out half as much white-lead as the quantity of paint needed. 2. Empty the white-lead into a pail or other suitable paint pot large enough to hold three times the amount of the white-lead. 3. Fill vessel used to measure out the white-lead one-fifth full with turpentine. 4. Fill up remaining four-fifths of vessel with pure raw linseed oil. 5. Pour a little of the liquid (not more than a pint) into the white-lead and stir it in well. When well mixed, stir in a little more and so

on until all the liquid is mixed into the white-lead. 6. Stir in liquid turpentine drier to the amount of about one tablespoonful (or one-eighth of a gill), to each pint of oil used. 7. Strain thru cheesecloth.

You now have good heavy paint which is suitable for a gloss finishing coat. If for any reason a thinner paint is wanted, pour some of the heavy paint into another paint pot and thin it with linseed oil and turpentine. For example, for priming new unpainted wood increase the amount of paint by half with a mixture of linseed oil and turpentine, using two parts linseed oil and one part turpentine.

FLAT PAINT.

Where a dull or so-called "flat" finish is desired, as for interior decoration on either woodwork or plaster walls, a *flatting* liquid instead of linseed oil should be mixed with the white-lead. The best material for this purpose is Dutch Boy flatting oil, but turpentine may be used if the other cannot be obtained. Dutch Boy flatting oil comes in one and five-gallon cans. It produces a flat finish which is remarkable for its beauty and washability.

To make flat paint, just mix together equal parts of white-lead and flatting oil (or turpentine). Pour the flatting liquid into the white-lead a little at a time, stirring thoroly before adding each additional quantity. If turpentine is used, finally add one tablespoonful of drier for each pint of paint. If Dutch Boy flatting oil is used, no drier is required.

Flat paint, mixed as directed above, can be used for undercoats as well as the finish-

ing coat on woodwork and for the second and third coats on plaster. For the *priming* coat on plaster, it is better to used *boiled* linseed oil with the white-lead because the plaster often has so-called "fire-cracks" in it which appear later as fine, dull lines to mar the beauty of the finished surface. Boiled linseed oil seals these cracks better than other thinners. If boiled linseed oil cannot be obtained, use raw linseed oil. It is just as good in a great many cases, but it will not prevent fire-cracks so well. In case raw oil must be used, put in some liquid drier, a tablespoonful to every quart of oil, after the paint is all mixed. Stir it in well.

COLORED PAINT.

One of the special advantages of making paint from white-lead is that it can be colored to the exact tint you want, simply by adding tinting colors ground in oil. These colors-in-oil can be bought in small quantities where the white-lead is bought. A little lampblack added to white paint produces gray, chrome yellow makes cream or any yellow tint, chrome green makes green tints, Chinese blue makes blue tints, etc.

Formulas for securing a number of popular colors are listed below. These formulas give the amount of color-in-oil required to tint one gallon either of gloss paint or flat paint made with white-lead. A lesser or greater quantity of paint may be tinted to the desired color simply by decreasing or increasing proportionately the amount of color-in-oil called for by the formula.

TINTING ONE GALLON OF PAINT.

Tint	*Color-in-Oil*	*Gloss Paint*	*Flat Paint*
Pink	Venetian Red	1⅛ oz.	1½ oz.
Light Blue	Chinese Blue	½ oz.	¾ oz.
Light Green	Med. Chrome Green	9¾ oz.	13 oz.
Green	Med. Chrome Green	2 lbs.	2¾ lbs.
Cream	Lemon Chr. Yellow	⅛ oz.	1/6 oz.
Yellow	Lemon Chr. Yellow	4¼ oz.	5¾ oz.
Buff	Med. Chrome Yellow	2¾ oz.	3¾ oz.
Light Drab	Burnt Umber	1½ oz.	2 oz.
Dark Drab	Burnt Umber	5 oz.	6¾ oz.
Light Gray	Lampblack	½ oz.	¾ oz.
Dark Gray	Lampblack	1¼ oz.	1¾ oz.

A little Venetian red added to any of the above colors except the greens will give a warmer tint. In the case of the greens, the warmer effects are secured by adding yellow. If a colder color is desired, add a little Chinese blue to the pink, greens, drabs and grays and a little chrome green with a touch of blue to the cream, yellow and buff. To soften or gray a color, add a little lampblack. To lighten a color, simply use less color-in-oil or more white-lead; to darken it, add more color-in-oil.

As colors-in-oil of different manufacturers vary in strength, the above formulas are at best only approximate. Therefore, add the color-in-oil gradually (stir in a drop or two at a time) and stop when the desired tint is reached even if the formula calls for more. So also, if the tint is too light, add more colors-in-oil until the tint is exactly right. Before adding the tinting colors thin them to about the same consistency as the white paint with linseed oil, flatting oil or turpentine, depending upon whether gloss or flat paint is being used.

HOW MUCH PAINT TO MAKE.

One pound of white-lead paste, thinned as directed under "Gloss Paint" and "Flat Paint," will make about one-half pint of paint or enough to cover about forty square feet of surface, one coat. Other quantities will cover as follows:

Pounds of White-Lead	*How Much Paint It Makes*	*Square Feet It Covers*
5	2½ pints	185
10	2½ quarts	375
12½	3 quarts	450
25	1½ gallons	900
50	3 gallons	1800
100	6 gallons	3600

HOW MANY COATS?

Three coats of white-lead paint are recommended for unpainted wood, inside as well as outside. Many try to make two coats do, but it is mistaken economy. The third coat adds only one-third to the cost and makes twice as good a job. That is, it will look better and last much longer.

Two coats are sufficient in repainting wood if the old paint is in good condition as it serves as a priming coat. Sometimes one coat will be found sufficient.

New plaster should not ordinarily be painted until it has dried and set for a year. Some painters, however, artificially age such walls by applying a coat of zinc sulphate solution made in the proportion of two pounds of zinc sulphate to a gallon of water.

When painting new plaster walls, three coats should be used. Two coats should be used when old plaster walls are painted a different color from the old paint.

TIME BETWEEN COATS.

Allow plenty of time between coats for the paint to dry. Exterior work should be allowed to dry two or three days before the next coat is applied and interior work at least twenty-four hours.

HOW TO MAKE PUTTY.

The best putty is made of equal parts of white-lead and whiting, softened with linseed oil. Good painters use no other kind.

MAKING JOINTS TIGHT.

White-lead paste, just as it comes in the tin or keg, is excellent for making pipe joints gas-tight, water-tight and air-tight. Good plumbers and gasfitters white-lead all joints.

COLOR SCHEMES AND SUGGESTIONS.

Any reader of this booklet who would like to have some help in choosing a color scheme for his house is invited to send to us for our booklets on home decoration. We have color suggestions for both the outside and the inside of the house. They are free and will be mailed gladly on request. Questions on any phase of painting will be answered and we look upon such an inquiry not as a trouble, but as a favor to us.

LINSEED OIL IN SEALED CANS.

Owing to the fact that there has been so much complaint on the part of consumers,

painters and dealers regarding the adulteration of linseed oil, we have placed on the market pure linseed oil, just as it is crushed from the flaxseed, in one and five gallon cans. These cans are sealed at the spout to prevent tampering and bear the Dutch Boy Painter trademark as a guarantee of purity. By buying linseed oil in this way it is possible to be sure of best quality of pure linseed oil at a cost not exceeding a few cents additional for every gallon of paint—a very small amount to pay for insurance that you are getting pure oil. The cans are packed six one-gallon cans to a wooden case and one five-gallon can to a wooden case.

BRUSHES.

The body brush is the brush used for applying the paint on the body of the house or other places where there is plenty of room to spread the paint. The round brush is considered the best body brush. This brush is sometimes called the pound brush, as it was formerly the custom to put in just enough bristles to cause the brush to weigh one pound.

The smaller brushes—trimming or sash brushes they are called—are used for painting sash corners, crevices and other parts too small to permit the use of the body brush.

These brushes both come in round and flat shapes. The choice between the two is a matter of personal opinion, altho the old painters use the round brush, claiming that with the flat brush one is apt to allow the paint to flow rather than brush it in.

In no case are cheap brushes economical. The best brushes are made of bristles, while the cheaper brushes are made of horse-hair

and lack the toughness, strength, elasticity or spring, wearing quality and absorbing or paint-holding power of bristle.

There are grades, too, of bristle, and the painter should be careful not to get a brush with soft and flabby bristles, as a brush of this kind will not spread the paint properly. When this happens one is apt to waste more paint than the saving amounts to in the cost of the brush, to say nothing of the bad results obtained in the painting itself.

CARE OF BRUSHES.

The amount of wear that a brush will give depends as much upon its care as upon its use. A brush which receives proper care will outlast two that receive no care, or poor care.

Under no circumstances allow the paint in a brush to dry and harden. When the paint in a brush is allowed to become hard, it is almost impossible to clean the brush and the bristles will never be the same thereafter. Usually it is cheaper to throw away such a brush than to attempt to reclaim it.

Brushes can be cleaned by soaking them in turpentine or benzine and then washing them out with ordinary soap and water. It is good practice also to straighten out the bristles with a comb and when dry to wrap brushes carefully in moisture-proof paper before putting them away.

The value of a brush depends to a large extent on the springiness of its bristles. Once the bristles become soft and flabby, its usefulness is impaired. Putting a brush in water will soon cause the bristles to lose

their springiness. For this reason, never keep a brush in water in the hope of keeping it in good condition. When you want to use a brush the next day again, suspend it in the paint which you have been using or in linseed oil. Always hang the brush so it does not rest on its bristle ends. This may be done by drilling a small hole in the handle of the brush near the top of the ferrule, putting a wire thru the hole and laying the wire across the top of the paint or oil container. Some brushes come with the hole already in them.

KEEPING PIGMENT SOFT.

Unused portions of a keg of Dutch Boy white-lead or Dutch Boy red-lead may be kept soft and free from skins by pouring water over its surface to the depth of an inch or more, and keeping the lid on the keg. First of all, however, the lead should be scraped down from the sides of the keg.

ADVANTAGES OF STEEL KEGS.

Dutch Boy white-lead and Dutch Boy red-lead are packed in steel kegs. The kegs come in four sizes, 12½, 25, 50 and 100 pounds. Each keg is drawn by heavy machinery from a single piece of steel. The kegs are therefore seamless and practically indestructible.

The smaller sizes, 12½'s, 25's and 50's, have sloping sides and are fitted with bails. They make the best paint pot a painter could have. As the sloping sides would prevent the keg rolling straight when turned on its side, the large, 100 pound keg has parallel sides.

The advantages of packing white-lead and

red-lead in steel kegs are many. Among them are the following:

First, the steel keg keeps the contents in perfect condition until used. There are no pores to absorb the oil and leave the lead next the sides of the keg dry and caked.

Second, every bit of white-lead or red-lead can be easily taken out of our steel keg. This is most difficult if not absolutely impossible to accomplish in the case of a wooden keg.

STEEL KEGS AS HOME AND FARM UTENSILS.

The uses to which the steel kegs when emptied can be put are many. They can be used as kitchen utensils, water buckets, pails for watering and feeding stock, mixing bran mash; in fact, can perform the same services as any other bucket. Being of one solid piece (no seams) they may be put on the fire.

Every particle of pigment or paint can be removed from the steel keg. Scrape the keg as clean as possible, and to remove any bits of pigment or paint that may then cling to the sides, rinse thoroly with benzine. The keg will then be ready to use for ordinary purposes.

If the keg is to be used as a cooking utensil it should be filled with a solution of lye and water and allowed to soak overnight. This will remove the lacquer as well as the paint.

HOW TO OPEN THE STEEL KEGS.

The opening of the smaller sizes, 12½, 25 and 50 pound kegs, is very simple. First, pry the lugs of the lid outward with a screw-

driver until clear of the reinforcing wire of the rim. Second, tap the straightened lugs outward with a hammer and the lid will come off. (The process is easier if the pail is turned upside down first.)

The 100 pound keg has six crimps which are pressed in the edge of the cover under the wire which reinforces the chime, thus locking it very securely on the inside. These crimps are drawn back by striking the cover sharply. Instead of letting the hammer strike the head squarely, let it strike somewhat on its edge so that the blow will draw the crimped edge from *under* the wire rather than merely drive it *downward*. The outer edge of the cover which curls downward over the reinforced edge of the keg is held there by friction. This friction is overcome by tapping the projecting edges on the upper side after the crimps are drawn back. Ten seconds is sufficient to open the keg if done properly.

USEFUL INFORMATION

A WATCH AS A COMPASS.

Point the hour hand to the sun. The north and south line will pass through the center of the watch dial and a point midway between the hour hand and the figure 12.

FINDING CAPACITY OF TANKS IN GALLONS.

First step (all measurements to be in inches):

For rectangular tanks, multiply the length by the width by the depth.

For cylindrical tanks, multiply the length by

the square of the diameter, and the result by .7854.

For tanks with elliptical cross section, multiply the length by the short diameter by the long diameter, by .0339.

Second step:

Divide the result by 231, which is the number of cubic inches in one gallon. The answer is the capacity of the tank in gallons.

TABLE SHOWING CAPACITY OF CORN CRIBS.

(Height, 7½ feet)

	Length	½	1	12	14	16	18	20
Width	6	13	27	320	373	427	480	533
	6¼	13	28	333	389	444	500	556
	6½	14	29	347	404	462	520	578
	6¾	15	30	360	420	480	540	600
	7	16	31	373	436	498	560	622
	7¼	16	32	387	451	516	580	644
	7½	17	33	400	467	533	600	667

	Length	22	24	28	32	36	48	64
Width	6	587	640	747	853	960	1280	1707
	6¼	611	667	778	889	1000	1333	1777
	6½	636	693	809	924	1040	1387	1849
	6¾	660	720	840	960	1080	1440	1920
	7	684	747	871	996	1120	1493	1991
	7¼	709	773	902	1031	1160	1547	2062
	7½	733	800	933	1067	1200	1600	2133

If not 7½ feet high, multiply by the given height and cut off right-hand figure. If above crib were only 7 feet high, it would hold

(800 x 7)=560 (o. bu. etc.). The same space will hold 1⅘ times as much grain as ear corn.

CONCRETE WORK.

Concrete for walls or foundation work should be mixed 1 part Portland cement, 2 parts sharp sand and 6 parts washed gravel.

Finish coat for pavements, steps and other such work should be mixed 1 part Portland cement and 2 parts sharp sand or rough run limestone dust. Mix cement and sand dry, then mix with gravel dry and afterwards wet with the least quantity of water possible to saturate the mixture.

A bag of cement contains 94 pounds net. Four bags of Portland cement=1 barrel; 3 bags natural cement=1 barrel.

FAMILIAR FACTS.

Doubling the diameter of a pipe increases its capacity four times.

A gallon of water (U. S. standard) weighs 8⅓ pounds and contains 231 cubic inches.

A cubic foot of water contains 7½ gallons, 1,728 cubic inches, and weighs 62½ pounds.

To find the pressure in pounds per square inch of a column of water, multiply the height of the column in feet by .434.

Steam rising from water at its boiling point (212 degrees) has a pressure equal to the atmosphere (14.7 pounds to the square inch).

At sea-level water boils at 212 degrees Fahrenheit. For each degree (Fahr.) less at which water boils estimate the elevation at 550 feet.

A standard horse-power: The evaporation of 30 pounds of water per hour from a feed water temperature of 100 degrees F. into steam at 70 pounds gauge pressure.

To find capacity of tanks any size: Given dimensions of a cylinder in inches, to find its capacity in U. S. gallons: Square the diameter, multiply by the length and by .0034.

SQUARE BOX MEASURE.

(APPROXIMATE).

A box 24 x 16 inches square and 14 inches deep will contain half a barrel.

A box 16 x 16¾ inches square and 8 inches deep will contain one bushel.

A box 12 x 11¼ inches square and 8 inches deep will contain half a bushel.

A box 8¼ x 8¼ inches square and 8 inches deep will contain a peck.

A box 4 x 4¼ inches square and 4 inches deep will contain one quart, dry measure.

WEIGHTS AND MEASURES.

TROY WEIGHT.

24 grains=1 dwt. 20 dwts.=1 ounce.
12 ounces=1 pound.
Use for weighing gold, silver and jewels.

APOTHECARIES' WEIGHT.

20 grains=1 scruple 8 drams=1 ounce.
3 scruples=1 dram. 12 ounces=1 pound.
The ounce and pound in this are the same as in Troy weight.

AVOIRDUPOIS WEIGHT.

27 11-32 grains=1 dram. 25 pounds=1 quarter.
16 drams=1 ounce. 4 quarters=1 cwt.
16 ounces=1 pound. 2,000 lbs.=1 short ton.
2,240 lbs.=1 long ton.

DRY MEASURE.

2 pints=1 quart. 4 pecks=1 bushel=
8 quarts=1 peck. 1¼ cu. ft.
36 bushels=1 chaldron.

LIQUID MEASURE.

2 teaspoons=1 dessert spoon
2 dessert spoons=1 tablespoon
8 tablespoons=1 gill

4 gills=1 pint.
2 pints=1 quart.
4 quarts=1 gallon.
31½ gallons=1 barrel.
2 barrels=1 hogshead.
1 bbl. for oil or other liquid contains about 50 gallons.

TIME MEASURE.

60 seconds=1 minute.
60 minutes=1 hour.
24 hours=1 day.
7 days=1 week.
28, 29, 30 or 31 days=1 calendar month.
(30 days=1 month in computing interest).
52 weeks=1 year.
365 days=1 year.
366 days=1 leap year.

CIRCULAR MEASURE.

60 seconds=1 minute.
60 minutes=1 degree.
30 degrees=1 sign.
90 degrees=1 quadrant.
4 quad'ts=12 signs, or
360 degrees=1 circle.

LONG MEASURE.

12 inches=1 foot.
3 feet=1 yard.
5½ yards=1 rod.
40 rods=1 furlong.
8 furlongs=1 stat. mile.
3 miles=1 league.

CLOTH MEASURE.

2¼ inches=1 nail.
4 nails=1 quarter.
4 quarters=1 yard.

MARINERS' MEASURE.

6 feet=1 fathom.
120 fathoms=1 cable length.
7½ cable lengths=1 mile.
5,280 feet=stat. mile.
6,085 feet=1 naut. mile.

MISCELLANEOUS.

3 inches=1 palm.
4 inches=1 hand.
9 inches=1 span.
18 inches=1 cubit.
21.8 inches=1 Bible cubit.
2½ ft.=1 military pace.

SQUARE MEASURE.

144 sq. inches=1 sq. ft.
9 sq. feet=1 sq. yard.
30¼ sq. yards=1 sq. rod.
40 sq. rods=1 rood.
4 roods=1 acre.
640 acres=1 sq. mile.

SURVEYORS' MEASURE.

7.92 inches=1 link.
25 links=1 rod.
4 rods=1 chain.
10 square chains or 160 square rods=1 acre.
640 acres=1 square mile.
36 square miles=(6 mi. square)=1 township.

CUBIC MEASURE.

1,728 cu. in.=1 cu. ft.
27 cu. ft.=1 cu. yd.
2,150.42 cu. in.=1 standard bushel.
1 cu. ft.=about four-fifths of a bu.
128 cu. ft.=1 cord (wood).
40 cu. ft.=1 ton (shpg.).

MENSURATION, LENGTH, AREA AND VOLUME.

LENGTH.

Circumference of Circle=diameter×3.1416.
Diameter of Circle=circumference×.3183.
Side of Square of equal periphery as Circle=diameter ×.7854.
Diameter of Circle of equal periphery as Square=side ×1.2732.
Side of an inscribed Square=diameter of Circle× .7071.
Length of arc=number of degrees×diameter×.008727.
Circumference of Circle whose diameter is 1= 3.14159265.
English statute miles=lineal feet×.00019.
English statute miles=lineal yards×.00568.

AREA.

Parallelogram=base×perpendicular height.
Trapezoid=half the sum of the parallel sides×perpendicular height.
Triangle=base×half perpendicular height.
Circle=diameter square×.7854 or circumference square×07958.
Sector of a Circle=length of arc×half radius.

Segment of a Circle=area of sector of equal radius-triangle when segment is less, and+area of triangle when segment is greater than the semicircle.
Side of square of equal area as Circle=diameter×.8862 or circumference .2821.
Diameter of a Circle of equal area as Square=side×1.1284.
Diameter of Circle of equal area=square foot or area ×1.12837.
Parabola=base×2-3 height.
Ellipse=long diameter×short diameter×.7854.
Regular Polygon=sum of sides×half perpendicular distance from center to sides.
Cylinder=circumference×height+area of both ends.
Sphere=diameter squared×3.1416, or diameter×circumference.
Segment of Sphere=height of segment×circumference of sphere of which it is a part×area of base.
Pyramid or Cone=circumference of base×½ slant height×area of base.
Frustrum of a Pyramid=sum of circumference at both ends×½ slant height+area of both ends.
Convex Surface=square of a diameter of a sphere×3.1416.
Square feet=square inches×0.00695.
One square foot=183.346 circular inches.

VOLUME.

Prism or cylinder=area of end×length.
Sphere=cube of diameter×.5236.
Side of an equal cube=diameter of sphere×.806.
Length of an equal cylinder=diameter of sphere×.6667.
Segment of sphere=(height squared+three times the square of radius of base)×(height×.5236).
Pyramid or cone=area of base×1/3 altitude.
Frustrum of cone=multiply area of two ends together, extract the square root, add to this root the two areas and ×1/3 altitude.
Cubic feet=cubic inches×0.00058.
Cubic yards=cubic feet×0.03704.
Cubic feet=cylindrical inches×0.0004546.
Cubic yards=cylindrical feet×0.02909.
Imperial gallons=cubic inches×0.003607.
Imperial gallons=cubic feet×0.6232.
Imperial gallons=cylindrical inches×0.002832.
Imperial gallons=cylindrical feet×4.895.
One cubic foot=2200 cylindrical inches.
Cwt.=avoirdupois pound×.009.
Ton=avoirdupois pound×0.00045.

METRIC EQUIVALENTS.

LINEAR MEASURE.

1 centimeter=0.3937 in.	1 in.=2.54 centimeters.
1 decimeter=3.937 in.=0.328 feet.	1 ft.=3.048 decimeters.
1 meter=39.37 in.=1.0936 yards.	1 yard=0.9144 meter.
1 dekameter=1.9884 rds.	1 rod=0.5029 dekameter.
1 kilometer=0.62137 mi.	1 mi.=1.6093 kilometers.

SQUARE MEASURE.

1 sq. centimeter=0.15550 sq. in.	1 sq. inch=6.452 square centimeters.
1 sq. decimeter=0.1076 sq. ft.	1 sq. foot=9.2903 square decimeters.
1 sq. meter=1.196 sq. yd.	1 sq. yd.=0.8361 sq. m'r.
1 acre=3.954 sq. rd.	1 sq. rd.=0.2529 acre.
1 hektar=2.47 acres.	1 acre=0.4047 hektar.
1 sq. kilometer=0.386 sq. mile.	1 sq. mile=2.59 sq. kilometers.

MEASURE OF VOLUME.

1 cu. centimeter=0.061 cu. in.	1 cu. in=16.39 cu. centimeters.
1 cu. decimeter=0.0353 cu. ft.	1 cu. ft.=28.317 cu. decimeters.
1 cu. mr. / 1 stere = 1.308 cu. yd. / 0.2759 cd.	1 cu. yd.=0.7646 cu. m'r.
	1 cord=3.624 steres.
1 liter= 0.908 qt. dry. / 1.0567 qt. liq.	1 qt. dry=1.101 liters.
	1 qt. liq.=0.9463 liter.
1 dekaliter= 2.6417 gals.	1 gal.=0.3785 dekaliter.
1 hektoliter=2.8375 bu.	1 peck=0.881 dekaliter
	1 bu.=0.3524 hektoliter

WEIGHTS.

1 gram=0.03527 ounce.	1 ounce=28.35 grams.
1 kilogram=2.2046 lbs.	1 lb.=0.4536 kilogram.
1 metric ton=1.1023 English tons.	1 English ton=0.9072 metric ton.

APPROXIMATE METRIC EQUIVALENTS.

1 decimeter=4 inches.	1 liter= 1.06 qt. liquid. / 0.9 qt. dry.
1 meter=1.1 yards.	
1 kilometer=5/8 of mile.	
1 hektar=2½ acres.	1 hektoliter=2 5-8 bu.
1 stere or cu. meter=¼ of a cord.	1 kilogram=2 1-5 bu.
	1 metric ton=2,200 lbs.

DEPARTMENT OF DECORATION.

If you have some special problem in decoration or color selection to solve, address your inquiries to National Lead Company's Department of Decoration, and your letter will receive prompt attention. When writing for color scheme suggestions, please answer the questions and requests for information about your home that are listed below. The more we know about your home the more satisfactorily will we be able to help you with your problems.

Exterior.

If you want a color scheme suggestion for the exterior of your home, please give us the information requested below:

1. Are the outside walls built of wood, brick, tile, concrete, stucco or stone?
2. Of what material is the roof?
3. Are there window blinds?
4. In what direction does the house face?
5. Give description of surroundings including colors of nearby houses.
6. What is your color preference for the body of the house?
7. If not a new house, what colors were used before?
8. Approximate size of house.
9. What is the style of architecture?

Interior.

If you want a color scheme suggestion for the interior of your home, please give us the information requested below:

Handy Book on Painting

1. Give rough floor plan of house, stating dimensions of rooms.
2. What kind of wood is the trim?
3. Will you paint or stain the trim?
4. Of what kind of wood is the floor?
5. Where there is paneling give height and description.
6. Give height of picture molding and chair-rail from floor.
7. Are the plastered walls rough or smooth finish?
8. Describe previous decoration if walls have been treated.
9. Describe fireplace if there is one and give location.
10. Give particular colors or other decoration already in mind.
11. Give elevation drawings or photograph if possible.

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MEMORANDA

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THIS famous little character, our Dutch Boy Painter trademark, is put on our products as a means of identification and as a guard against substitution. He symbolizes purity of paint materials (white-lead, red-lead, flatting oil, linseed oil) and signifies certain satisfaction.

You will find the Dutch Boy Painter on 1 and 5 pound tins and 12½, 25, 50 and 100 pound kegs of Dutch Boy white-lead, 12½, 25, 50 and 100 pound kegs of Dutch Boy red-lead, and 1 and 5 gallon sealed cans of Dutch Boy flatting oil and Dutch Boy linseed oil.

Look at the Dutch Boy Painter again so you will remember him and remember to look for him when you need paint.

When you have need of babbitt metal or solder, buy Dutch Boy babbitt metal and Dutch Boy solder. Both are as good as Dutch Boy paint materials.